# Qatar Islamic Archaeology and Heritage Project

## End of Season Report : 2010-2011

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## End of Season Report

2010-2011

**The executive and staff of the Qatar Islamic Archaeology and Heritage Project acknowledge and appreciate the perceptive leadership and considerable support of:**

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*Chairperson of the QMA*

**His Excellency Sheikh Hassan Bin Mohammad Bin Ali Al Thani**

*Vice-Chairperson of the QMA*

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# 1. Introduction

## 1.1 Preamble

The second season of archaeological fieldwork in Stage 2 of the Qatar Islamic Archaeology and Heritage Project (QIAH) in northern Qatar was carried out between November 1st 2010 and March 29th 2011.

The fieldwork was undertaken by the Department of Cross-Cultural and Regional Studies, University of Copenhagen in partnership with, and funded by, the Qatar Museums Authority. This report provides summaries of the main elements of the archaeological fieldwork carried out in 2010-2011, including substantial excavations in Al Zubarah and Freiha, rescue excavations in Ruwais/Khasuma, and extensive survey work at Islamic sites in various locations across the northern half of the peninsula of Qatar.

## 1.2 Project Background

Centring on the major political, cultural, and commercial settlement of Al Zubarah, which prospered in the later 18th and early 19th century CE, the University of Copenhagen was charged with investigating the Islamic era archaeology and heritage of northern Qatar in 2009. Since then the project has carried out three successful seasons of archaeological fieldwork.

Northern Qatar represents a remarkable region in which to study the emergence of economically, culturally and politically specialised settlements and communities during the early modern era in the Gulf. Al Zubarah is one of the most complete preserved cultural and commercial towns in the region, and holds key insights into the nature of urban societies in the Gulf, as seen through trade and economy, social life and status, and human lifeways. The site is embedded within a distinctive interrelated seascape and landscape, which consists of multiple coastal and inland settlements, wells, agricultural areas and temporary camps. Understanding the relationship between this rich historic landscape and urban settlement of Al Zubarah is a key aim of QIAH.

As part of this season, QIAH team members carried out excavations in five areas at Al Zubarah (see Section 2) and three areas in Freiha (see Section 3). In addition, the sites of Fuwairit, Qal'at Shuwail, Ain Mohammad and Ruwais/Khasuma were mapped. A survey along the coastline between Fuwairit and Ras Laffan was carried out, while Philip Macumber's detailed geomorphological survey of northern Qatar was continued (see Section 4).

## 1.3 Aims and Objectives

The purpose of this section is to briefly outline the beginning of season objectives for each of the main areas of study in the 2010-2011 season. These are listed as bullet points for brevity and convenience.

### 1.3.1 Al Zubarah Excavation Point 1 (ZUEP01)

- To clarify the nature of Compound 2 by revealing its full extent and to gain a better understanding of its phasing and the function of its rooms
- To understand the chronology of Compound 2 in relation to other compounds in the excavation area and other earlier and later features
- To expose more of the Phase 6 occupation in ZUEP01, excavating a deep probe in the higher ground to the north where the best survival of a long stratigraphic sequence is most likely, in order to better understand the early occupation at Al Zubarah

- Determine whether there is a further alley or street to the north of Compound 2 to enable the further study of Al Zubarah's street plan

### 1.3.2 Al Zubarah Excavation Point 2 (ZUEP02)

- To continue to expose the Phase 5 architecture across the site, bringing the entire area into phase with the east-west running roads in the north and south
- To expand the excavations northward to link ZUEP02 with the QMA 'souq excavation area' to establish stratigraphic continuity between the two
- To determine the size and function of the important courtyard building beneath the current Phase 3 and Phase 4 architecture in the main area of excavation

### 1.3.3 Al Zubarah Excavation Point 4 (ZUEP04)

- To continue the excavations in the fortified, palatial compound by exposing all of the southeastern courtyard area and adjacent rooms
- To obtain further data on the date and function of the compound and the individual rooms in the courtyard area
- To excavate a further sounding into the midden between the compound and the outer city wall to obtain additional evidence for dating, diet and lifeways, as well as trace further the character of the outer city wall

### 1.3.4 Al Zubarah Excavation Point 5 (ZUEP05)

- This new excavation area targeted the sizeable midden mound number 7 in the northern part of the site in order to sample and obtain material culture and other finds for the reconstruction of the inhabitants' diet, trade links, patterns of consumption, lifestyle choices, and cultural traditions

### 1.3.5 Al Zubarah Excavation Point 6 (ZUEP06)

- ZUEP06 was a small sondage excavated through the stratigraphic deposits to the north of ZUEP01 to examine the deposits in an area of higher ground through the whole sequence of occupation.

### 1.3.6 Excavations in Freiha

- To complete excavations of the mosque (FREP01) launched last year and to detail its history of construction and use
- To open a large area in the core of the settlement west of the fort to understand the site's occupation in terms of chronology, economy, cultural traditions and trade (FREP04)
- To test excavate a series of areas to the north and northeast of the core of the settlement to better understand the phasing of the site and the earlier occupations suspected to be present here

### 1.3.7 Regional Survey

- To complete the town plan of Al Zubarah following on from the 2009 work, in particular the 1980s and earlier 2000s excavation areas
- To map a series of sites in the surrounding hinterland of Al Zubarah including, but not limited

to, Qal'at Shuwail, Musaykah, Ain Mohammed, Al Khuwair, Qal'at Thaqab, Qal'at Rakayat, Khidaj, Al Nabaah, Jumayl, Qal'at Yusufiah, Shadiraya, Ghariya, and Ruwais. This will enable a more detailed understanding of the development of Al Zubarah's hinterland

- To conduct test excavations – where necessary – at selected sites to obtain securely stratified samples of material culture and associated finds to enable a dating profile for the surveyed sites
- To carry out a detailed geomorphological assessment of the landscape surrounding Fuwairit to better understand the site's ecological and environmental setting and history
- To create the first ever map of Fuwairit by carrying out an intensive ground survey of the site
- To collect surface samples of ceramic and other finds
- To make a detailed assessment of the site's preservation conditions

## 1.4 Methodology

### 1.4.1 Excavation

The project utilised the widely used single-context recording system (used in the previous season), which was adapted to the project's specific needs. The system proved particularly useful for excavations in Al Zubarah, where complex urban stratigraphy was exposed across large open-areas. At times, however, the system was adapted to allow for excavation in somewhat more arbitrary levels, wherever sondages had to be excavated (e.g. ZUEP05 and Ruwais/Khasuma). In addition to using loci/contexts to distinguish particular features, architectural units or sediments, so-called "space sheets" were used to group related contexts together coherently. A common site grid aligned on the Qatar National Grid (QNG) was used, which was sub-divided into 5x5 metre squares. All single context and multi-context plans were drawn at 1:20 on Permatrace, which facilitated the subsequent scanning and digitization of site plans.

Samples were taken following a pre-designed scheme, on which basis deposits were sieved differentially according to their perceived interpretative importance. Botanical samples were likewise taken from significant sediment loci (midden deposits, floors, certain fills), and a minimum of 30 litres was taken per sample.

A more detailed overview of the methodology is provided in Richter (2011).

### 1.4.2 Survey

The project's regional survey utilised a variety of techniques, from remote sensing using satellite photographs, historic aerial images, kite photography and current aerial photographs, to field-walking and site mapping using a Total Station and Global Positioning Systems.

These techniques were employed differently at various sites. Total Station surveys were carried out at a number of key sites in the region, including Fuwairit, to create complete maps of these sites. Fieldwalking was carried out to collect representative samples of material culture for dating purposes. A further fieldwalking survey was carried out along the east coast of Qatar between Fuwairit and Ras Laffan.

Aerial imagery analysis was used to detect sites, characterise them, map their extent and understand their change in preservation over time. For this a combination of aerial imagery and historic map regression was used. Finally, kite photography was used to create overview images of sites to enhance documentation.

## 1.5 Summary

On the following pages we discuss the excavations in Al Zubarah and Freiha, the regional survey work at Fuwairit, Ruwais and other sites, as well as the rescue excavations carried out at Ruwais/ Khasuma. The report also provides a summary of the important finds analysis and conservation work carried out during the field season.

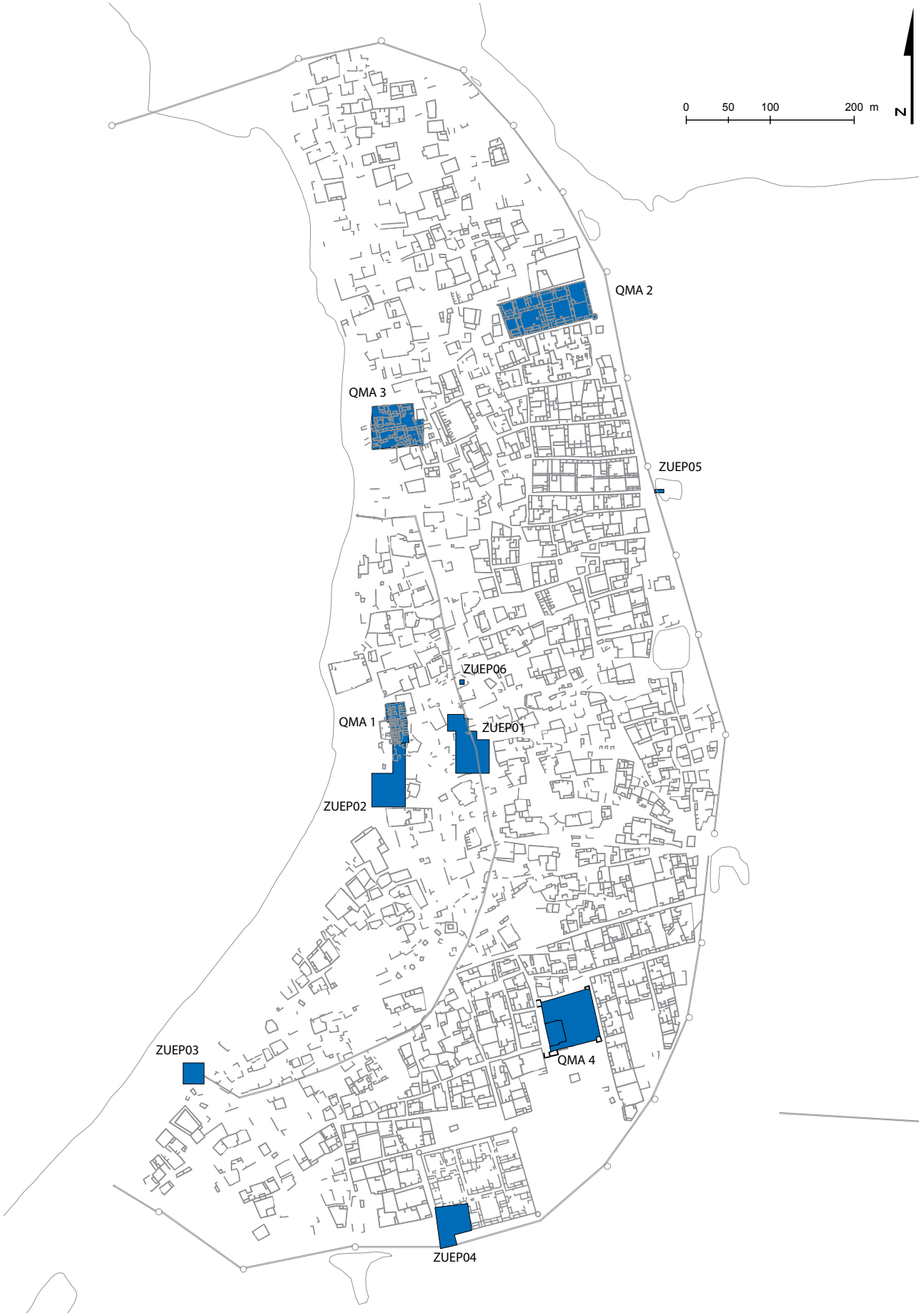



Figure 1.1: Map of Al Zubarah showing the principal excavation areas

# 2. Excavations in Al Zubarah

## 2.1 Al Zubarah Excavation Point 1 (ZUEP01)

*Lisa Yeomans*

### 2.1.1 Introduction

Excavations in ZUEP01 during the 2010-2011 season focused on understanding four features: two compounds, a street providing access to one of these compounds, and an external area to the north of this street (Figure 2.1). These were all built during the expansion of the town and are thought to represent architecture from Phase 5 of the settlement's occupation. During this phase the town was at its largest with blocks of courtyard houses organised around a street grid enclosed by the outer city wall. The main phase of settlement ends with the sacking of the town in 1811, and further archaeological evidence for this was found in ZUEP01. Rebuilding of the town and the construction of the inner city wall enclosing the smaller Phase 3 settlement took place thereafter, and some residual walls belonging to buildings that may date to this time frame were recorded and removed during the 2009-2010 season. In addition to the archaeological sequence dating from Phase 5, numerous features were excavated that suggest extensive earlier occupation either prior to the 1760s expansion or representing the initial occupation associated with their arrival. Here, we highlight some of the discoveries from the 2010-2011 season and provide an overview of the occupation sequence in ZUEP01.

Figure 2.1: North-facing, overhead photo showing Compound 2 (centre), Compound 4 (centre-left), the street to the north that provide access into Compound 4, and the external space beyond north of the street

### 2.1.2 Phase 6 Occupation

The Phase 5 architecture was built on a layer of mixed sand and cultural material. So far this has only been exposed below the southern end of Compound 4 and below the northern half of the courtyard of Compound 2 as well as below Sp.147 and Sp.166, where the Phase 5 occupation sequence was fully excavated (Figure 2.3). The sand itself has not yet been excavated, but it seals a number of earlier, as yet unexposed, features, which were visible in the sections of several pits excavated here. A number of cut features truncate the sand layer, although only a small number of these features have been excavated so far. These were rubbish pits, fire-pits and *tannurs* (Figure 2.2) indicating the extensive occupation that predates the Phase 5 architecture. Spatially there is no particular distribution of these features, which may suggest that they were part of, or arranged with, temporary, ephemeral structures (e.g. tents or *barasti*). Exposure and excavation of a larger area of features dating to Phase 6 is necessary before a fuller interpretation of the nature and date of the occupation can be made.

Figure 2.2: Pot (7372) reused as a *tannur* pre-dating the construction of Phase 5 architecture

### 2.1.3 Phase 5 Settlement in ZUEP01

The expansion of Al Zubarah in Phase 5 is characterised by the construction of large compounds accessed from a network of streets. Many of the compounds excavated so far are typical courtyard houses representing the domestic structures of the wealthier segments of the town's population. Compound 2 is an example of one of these structures with an internal open courtyard surrounded by domestic rooms of various functions, from latrines and washing areas, to cooking and sleeping areas. Access into the compound was from an east-west aligned laneway to the south, which also provided access into a larger courtyard house (Compound 1 excavated in the previous season). Compound 2 underwent minimal modification during its use with the occupation deposits accumulating from use in a recurrent and consistent manner. This differs from Compound 4 which was altered in its layout and function throughout.

Although only part of Compound 4 has been exposed, its original function focused, at least partially, on the production of dried dates and date syrup with two date presses or *madbasat* constructed during the original layout of the compound. Compound 4, perhaps significantly, was accessed from a different street to Compound 2. Access was from another east-west orien-

tated street north of the two compounds, with the street also providing access into an open area (Sp.190) where numerous temporary structures were erected over time. The urban layout, as demarcated by the access from streets, appears to be divided into zones with the excavations at ZUEP01 covering wealthier courtyard houses accessed from the southern street and production orientated and temporary structures accessed from the north. Although Compound 4 was initially associated with production activities, by its final occupation it had developed into a domestic courtyard house.

The external area to the north of the street also developed during Phase 5 with a curvilinear structure constructed in the northeast corner of the excavation area. This structure (Sp.191) would probably have been a small domestic arrangement providing a space to cook and sleep for an individual or small group of people. Eventually a more substantial roof requiring a large post was constructed in the structure and a stone-paved floor was laid. At the end of the Phase 5 occupation of Zubarah Sp.191 was terminated by fire.

*Compound 2*

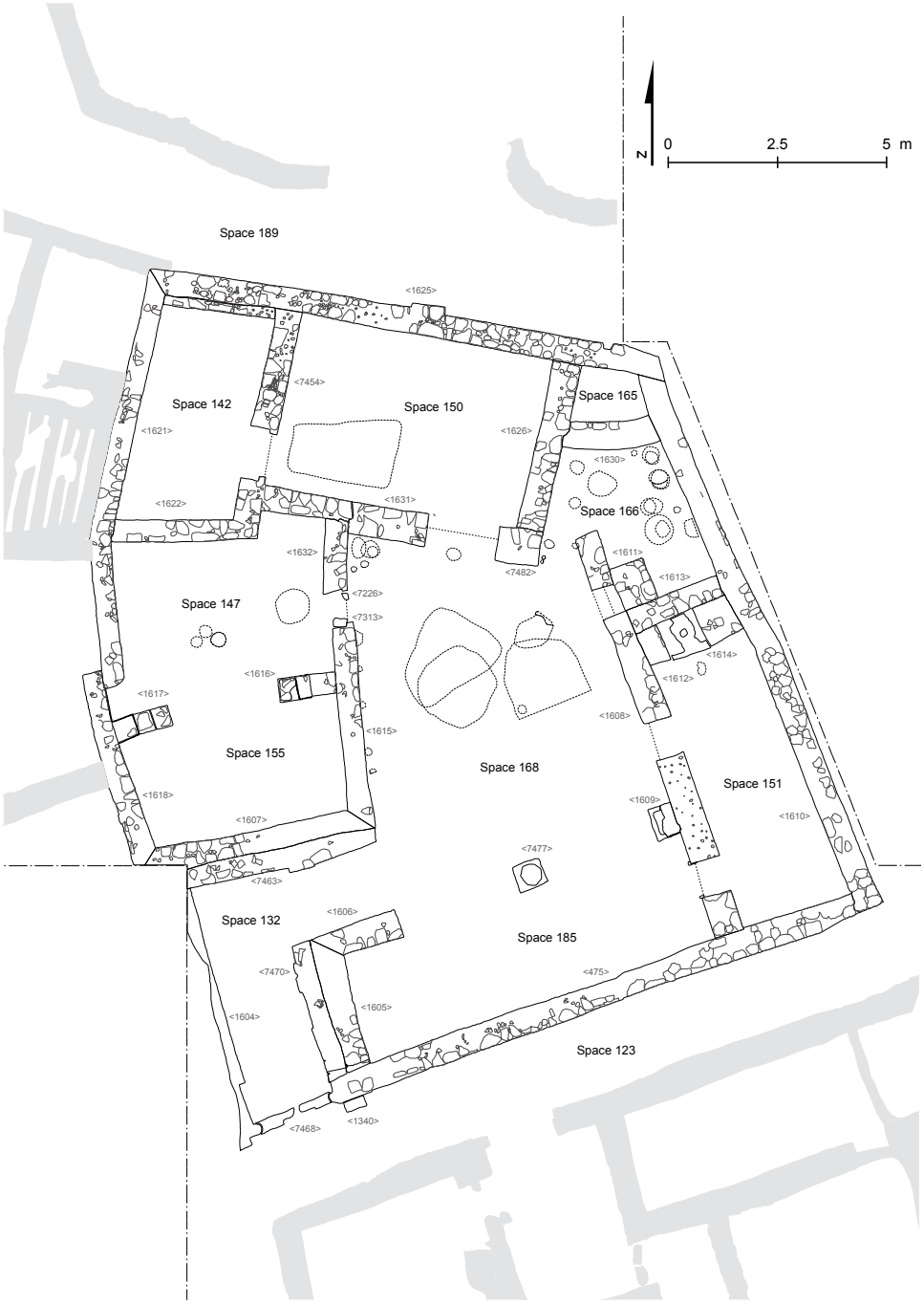



Figure 2.3: Plan of Compound 2 showing Space numbers designated to rooms within the courtyard house

Figure 2.4: Northwest facing photo of Compound 2 (in the foreground)

Compound 2 is trapezoidal in shape and contained within the area of two streets converging to the east (Figure 2.3). Although the overall shape of the compound is trapezoidal, the individual main rooms, built along the inside of the external walls, are rectangular allowing them to be easily roofed. On the west side of the compound this resulted in the overall curvature of the external wall with a change of angle where the internal wall dividing Sp.147 and Sp.142 is built into the external western wall. The layout of the courtyard house utilised an irregular plot of land whilst maintaining the regular shape of the main rooms. Walls were generally constructed from beach rock and gypsum stones with those needing to offer more structural stability constructed from aeolianite. The internal sides of the walls were all plastered and several rooms had a plaster surface laid over a stone paved make-up layer.

The main rooms of the compound consisted of a rectangular entrance passage (Sp.132) with bench features built into this eastern and northern ends. This entrance passage would have blocked the view into the compound from the street and provided an area for visitors to wait. To the east of this room, on the south side of the courtyard, was a long rectangular space (185) with a plastered surface. The north side of this space was open with the roof supported by a central column. This room would have provided a communal sitting area (*liwan*), a common feature of traditional Gulf architecture. Along the western side of the compound was a *hammam* (Sp.151). The north side of the compound was occupied by a large room (Sp.150) which could be accessed from both the courtyard and Sp.147. This room had to be traversed to reach the smaller plastered room (Sp.142) in the northwest corner of the compound which may have functioned as sleeping quarters. It seems probable that Sp.147 was not covered allowing the breeze to cool down the plastered room Sp.155 through a wide, arched opening. A collapsed arch was recovered from here during the 2009-2010 season. The main cooking room in the compound was Sp.166 which is a small irregular-shaped room formed by the construction of the surrounding rectangular rooms. In the corner of the room a small area of the original floor surface impressed with a relief of matting survived (Figure 2.5). To the north of this was Sp.165 which was a very small room plastered on the inside with no means of access at ground level. There is evidence of a small second storey

accessed by steps built into the internal wall just outside the kitchen (Figure 2.6). This upper storey would have been supported by three pedestals of masonry found in the southwest corner of Sp.166 and in the northeast and northwest corners of Sp.151. It is possible that the upper storey consisted of a wooden superstructure or may have been a flat, open roof space. It is unlikely that there was a full range of second storey rooms, however.

Occupation within Compound 2 resulted in the accumulation of debris in the small cooking room

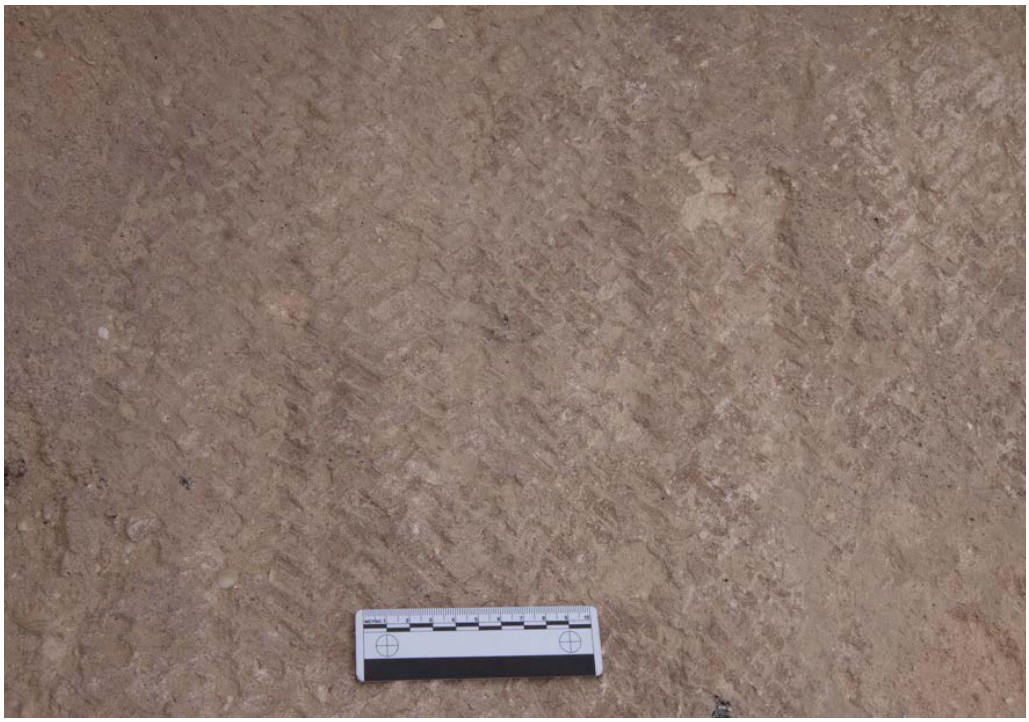


Figure 2.5: Matting impressions on the plaster surface (7004) in the southern corner of Sp. 166

Figure 2.6: Steps providing access to a probable small second storey or tower

(Sp.166) as well as in the courtyard. A series of *tannurs*, fire-pits and hearths were excavated in this room although some cooking also took place in Sp.147 and the courtyard. A rubbish pit in Sp.166 produced an oil lamp discarded amongst the other rubbish (Figure 2.7). Towards the end of the occupation sequence in Compound 2 a large pit lined with stones, possibly used for bitumen processing, was dug into the courtyard. Modifications to the architecture of the courtyard house were limited to those used to reinforce its structural stability.

Figure 2.7: Oil lamp found in a rubbish pit in Sp. 166 from the occupation of Compound 2

*Compound 4*

As already mentioned, Compound 4 was initially constructed with two date-presses or *madbasat* for the production of date syrup (Figure 2.8, Figure 2.9). Aside from the two date-presses, a small room (Sp.195) provided a wash basin as well as cooking facilities. The rest of the exposed part of the compound was left open but a number of hearths, stake- and postholes represent several temporary shelters or lean-tos erected to provide shade whilst working in the outside space.

The first major change in Compound 4 marked a considerable shift in use of the area and involved the dismantling of the upper parts of the walls of Sp.195 to form a large open space, which was re-surfaced. The nature of the occupation in this phase was characterised by numerous post-holes, hearths, one *tannur* and large rubbish pits. The surfaces themselves are the result of finely laminated occupation spreads, trample and patches of laid-down surfaces that built-up during the use of the area. The postholes represent temporary structures that would not all have been in use at the same time. There was also evidence of bitumen processing and other skilled activities (Figure 2.10).

After the enclosed area of Compound 4 had been used for successive temporary structures, similar in nature to the occupation north of the street, the compound was transformed into a typical courtyard house. Numerous walls were built forming new rooms (Figure 2.11) and another wall was knocked down and rebuilt to align perpendicularly with the new walls. The view into the courtyard was blocked with the construction of a partial wall along the line of sight through the entrance into the compound. Thresholds in doorways were plastered and had sockets for wooden doors and one of the old date-presses was converted into a latrine. A room specifically designed for cooking was built (Figure 2.12) with a wide open entrance from the courtyard.

Figure 2.8: View into Compound 4 from the street showing the two date-presses in use during the early occupation of Compound 4


Figure 2.9: End of season plan of Compound 4, the street and Sp. 190 showing the date-presses Sp. 192 and Sp. 187 from the initial use of Compound 4

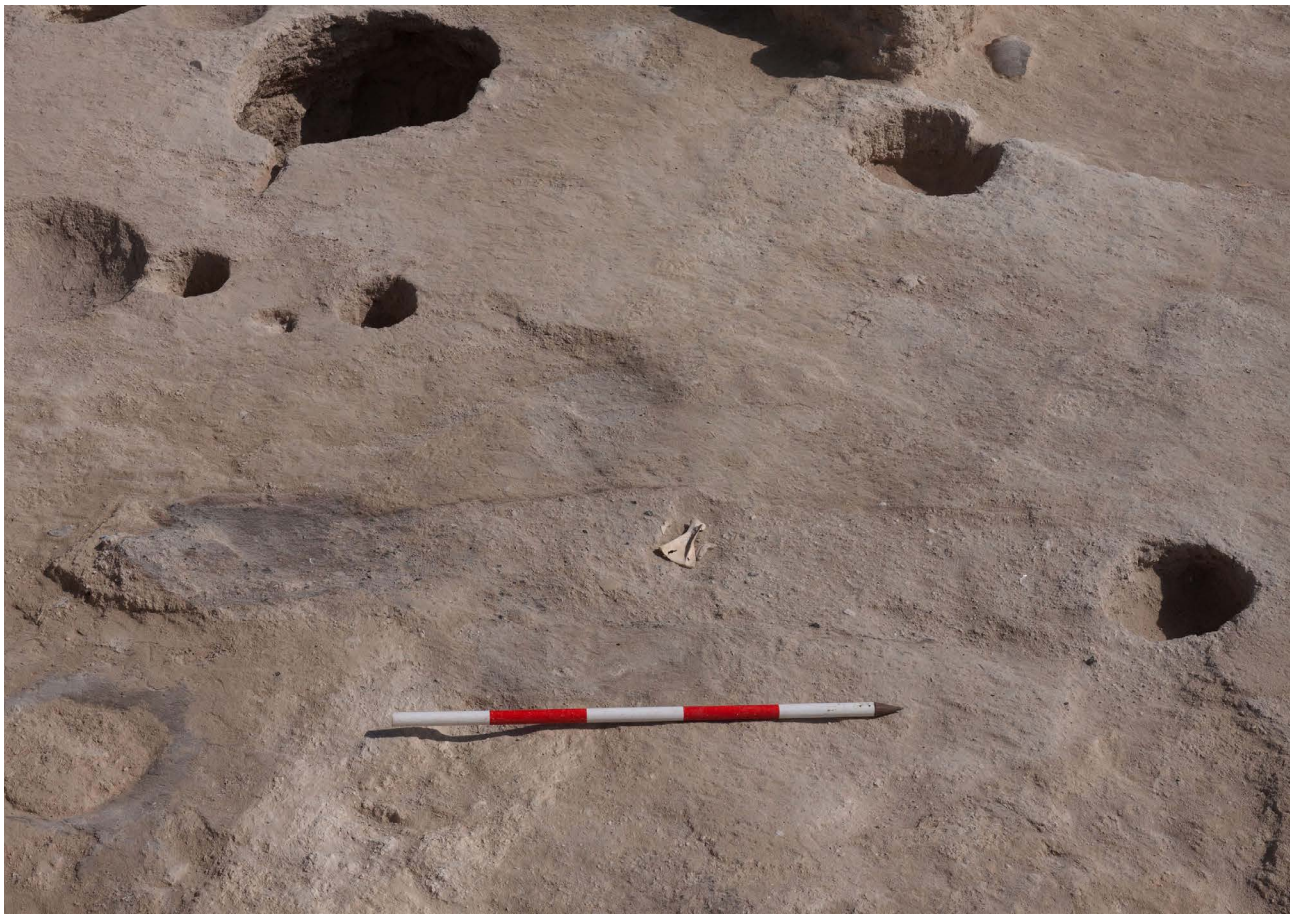


Figure 2.10: Circular hearth and flue [7218] before excavation showing the scorched edges along the entire feature which cuts an earlier wall

Figure 2.11: Newly created Sp. 181 forming one of the suite of rooms when Compound 4 was modified into a courtyard house

Figure 2.12: Excavated fire-pits in the centre of Sp. 182 with the *tannurs*

Presumably as the family occupying the courtyard house expanded or gained additional wealth, further rooms were added and at times subdivided into small rooms (Figure 2.13). There was no evidence of destruction by burning the end of the occupation of Compound 4. However, two large storage jars appear to have been abandoned and these were subsequently smashed *in situ* by the collapsing walls of the abandoned structure.

*The street*

Throughout Phase 5 the street (Sp.189) to the north of Compound 4 was re-surfaced repeatedly with the earliest surfaces still to be excavated. Occupation debris had been trampled into the surface of the street forming numerous thin laminations of debris. All deposits from the excavation of the street were 100% sieved recovering large assemblages of pottery and bone, along with numerous coins and other artefacts. The amount of waste that accumulated in the street is highlighted by the presence of articulated fish bones. A series of plastered gullies (Figure 2.14) built onto the external sides of the walls facing onto the street would have managed the flow of water running off the building after heavy rain.

Figure 2.13: The eastern series of rooms during the final occupation phase of Compound 4 showing Sp.146 in the foreground and Sp. 161 and Sp. 163 in the background.

Figure 2.14: Drain capping stones <1816> sealing drain in the street fed from a plastered gully

*Open area to the north of the street*

The occupation sequence to the north of the street remains to be fully excavated. The area is divided from the street by a low wall with a threshold close to the northern limit of excavation where the street navigates around Compound 4 (Figure 2.15). Numerous postholes cut the lowest surface reached during excavation, which would have resulted from a sequence of temporary structures. Following resurfacing, a number of *tannurs* were constructed perhaps indicating a slight shift in the temporary structures with the area exposed used as an external cooking space (Figure 2.16). In the north east of the area a curvilinear, un-plastered stone wall (enclosing Sp.191) was constructed. This is only partially visible within the limit of excavation and continues to the north and east beyond the excavation area. The western wall of the structure was robbed out, probably in Phase 3 when stones were needed for the construction of the Inner City Wall. Eventually a stone surface was laid and a large roof-support post was erected and held in place by a number of broken grind-stone fragments (Figure 2.17). Sp.191 remained in use for a while resulting in a number of surfaces and occupation debris spreads as well as hearths and a *tannur* within the room. Eventually, the occupation of Sp.191 ended when fire destroyed the structure. This fire resulted in the accumulation of a burnt deposit which was probably the remains of the roof that fell into the space when still alight as it also scorched the underlying surface. In section this burnt layer could be seen extending slightly beyond the wall of the structure, where it clearly sealed the final layer of street surface, indicating that the occupation of Sp.191 continued until the time when the street was abandoned. It seems possible, therefore, that the fire which destroyed structure Sp.191 was a result of the attack on the town in 1811, which terminated the occupation of the compounds and other structures built in Phase 5.

Figure 2.15: Access into the open area to the north of the street with the numerous post-holes and cuts for *tannurs* visible in Sp. 190

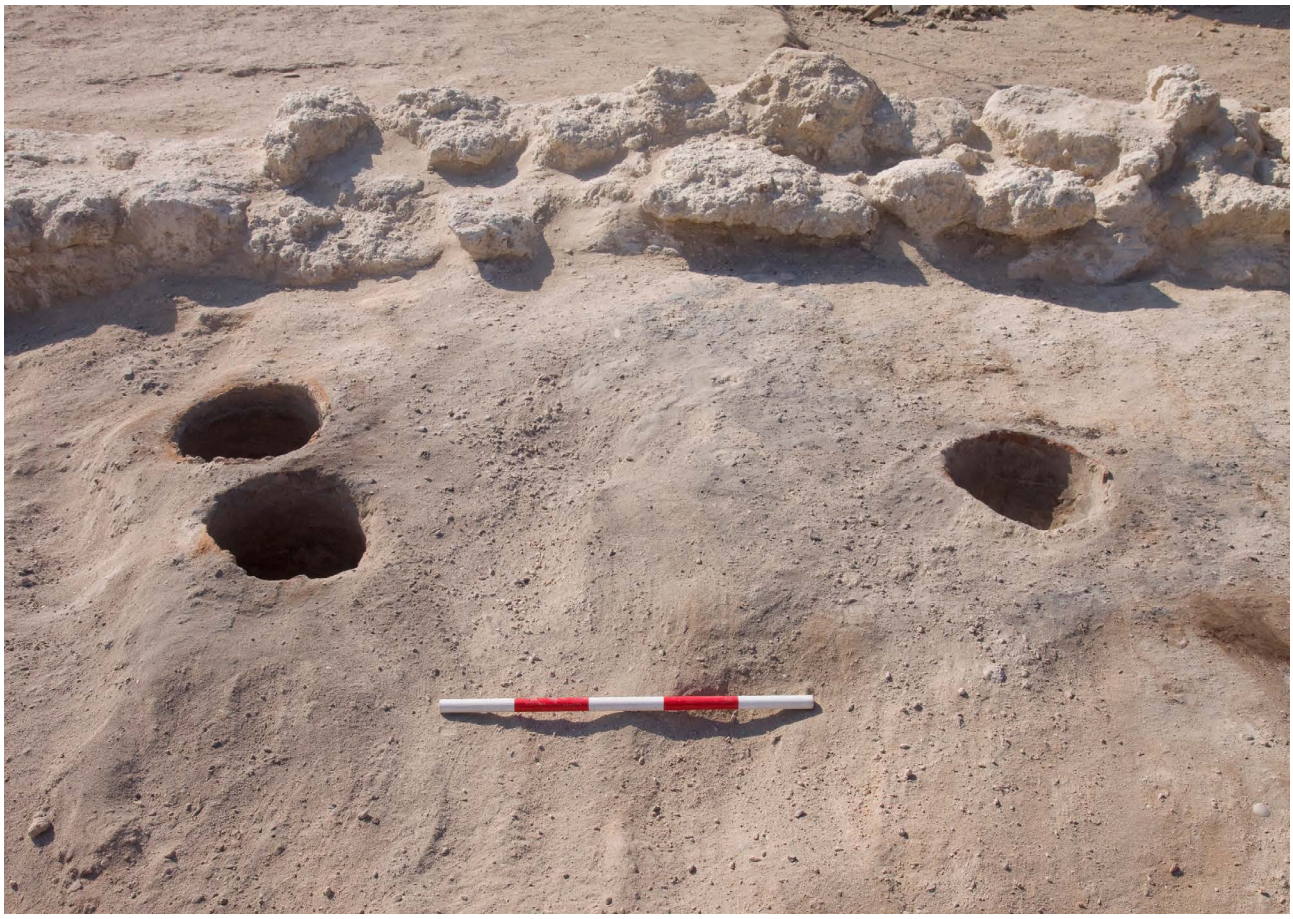


Figure 2.16: *Tannurs* (1822), (1825) and (1829) in Sp. 190

Figure 2.17: Structure Sp.191 showing the western wall removed by later robbing, and area of stone paving <1916>

### 2.1.4 Conclusions and potential for further work

The excavation of ZUEP01 in the 2010 to 2011 season has provided evidence from the occupation of the town during its main occupation phase (Phase 5). Large assemblages of pottery and bone, as well as numerous coins and other artefacts, provide dating evidence and information about the diet and status of these different groups, which will be analysed in due course. As most of the occupation sequence from Phase 5 of the settlement has been excavated at ZUEP01, the area now provides potential to examine the Phase 6 archaeological sequence over a much larger area. This will provide essential evidence allowing us to understand the earliest occupation of the site.

## 2.2 Al Zubarah Excavation Point 2 (ZUEP02)

*Michael House*

### 2.2.1 Introduction

Al Zubarah Excavation Point 2 (ZUEP02) is located inside the inner town wall of Al Zubarah slightly to the north of centre overlooking the beach about 50 m southeast of the QMA's excavations of the area identified as the '*suq*' (Figure 1.1 p. 5). Together with ZUEP01, this area has been the longest running excavation area in Al Zubarah and continues on from the previous season of work (see House 2011). As a result, most of the research aims remained the same with the overarching goal to try to gain a better understanding of the area and its function (either static or changing) throughout the development of Al Zubarah.

Last year's discovery of a number of rooms with significant densities of broken ceramics strewn across their floors, suggested that they functioned as shop fronts (House 2011). This highlighted the possibility that at least some of the structures identified in ZUEP02 form part of the *suq* previously excavated by QMA. One additional aim this season was to verify this idea by extending the excavation area northward by 35 metre, linking it to the previous QMA *suq* excavation area.

Similar to ZUEP01, ZUEP02 preserves evidence for the most complete archaeological sequences of phases in Al Zubarah (Phase 1-5), showcasing the site's development from the late 18th century to its abandonment in the early to mid 20th century. Apart from a few features in the newly opened northern extension, Phase 1 and Phase 2 were already completely excavated, recorded and removed during the previous season of excavation across ZUEP02.

The potential for exposing more of the *suq* area in ZUEP02 is of crucial importance for our understanding of Al Zubarah's urban structure. *Suqs* and their attendant buildings and features were important hubs and centres of the urban life in many Gulf and Arab towns and cities. Given Al Zubarah's history as a merchants and fishing port, excavations in the *suq* provide crucial pieces of information on the economic and social life of the settlement's inhabitants. Understanding the relationship between ZUEP02 and the former *suq* excavation area to the north is, therefore, of prime importance. Below, the principal phases in ZUEP02 will be discussed in turn.

### 2.2.2 Phase 5

This Phase has been only partially exposed or excavated in the southern and central part of the excavation area. Excavations in the new northern extension and in the southwest of the excavation area have not reached this point (Figure 2.18).

The tops of walls, which appear to belong to Phase 5, have been partially exposed in the western part of the northern extension. These walls are largely north-south aligned and tacit observations suggest that they are in line with Phase 5 architecture exposed elsewhere in ZUEP02. Exposure and excavation of these structures in the northern extension will be a focus of future fieldwork.

Other than in the previously excavated parts of ZUEP02, as reported in House (2011), Phase 5 architecture and features were exposed in the north-eastern area. Here six rooms (Spaces 014, 015, 016, 024, 030 & 031) were revealed north of an east-west running alleyway (Space 003). Three of these rooms were already excavated during the previous season. To the south of this area there began to emerge a second large courtyard compound bounded to the north and south by roads. Four rooms and a corridor were excavated this season (Spaces 034, 035, 043 and 058), along with part of a fourth room located below the retained Phase 4 date press (Space 011). Three of the rooms were accessed only from a large central courtyard to the north. Prior to its blocking, the corridor (Space 035) linked three other spaces excavated last season (Spaces 025, 027, and 028) to a room as yet unexcavated to the north. Further excavations are necessary to fully expose this structure in plan, but the rooms thus far excavated provide an initial insight into the nature

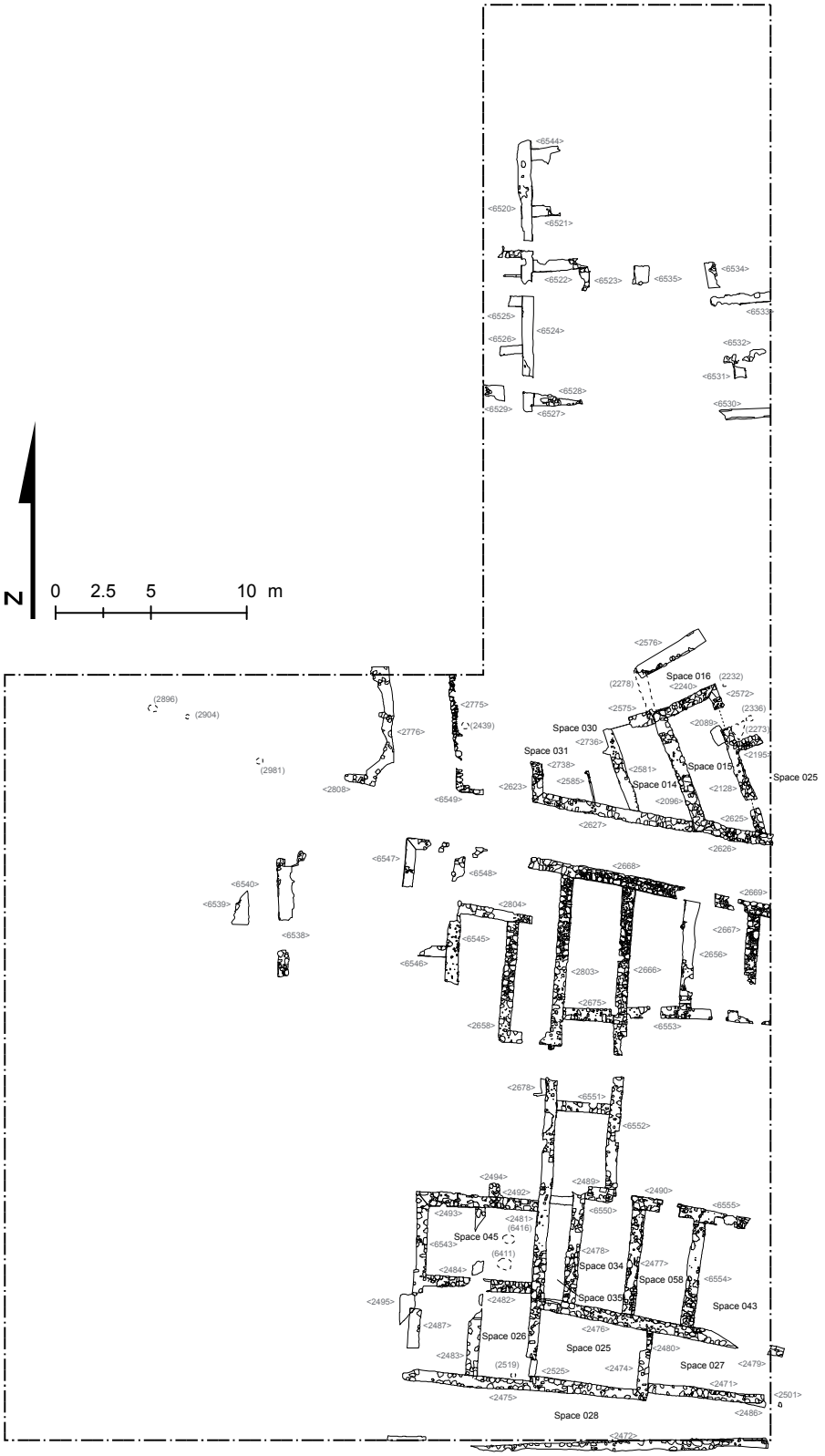



Figure 2.18: Phase 5 Architecture

of this building. As is common across the site, and typical of the Phase 5 architecture, walls are rendered in gypsum or mud. The rooms appear to be partially dug into the natural, as gypsum plastered steps lead up from them into the courtyard to the north.

A large room (Space 045) was also excavated to the west, which was separated from the rooms to the east by the corridor (Space 035; Figure 2.19). Excavations in this room revealed a collapsed arched lying in the centre, the outside of which had been clad in plaster (Figure 2.20). Excavations down to the floor level produced a scattering of finds, which consisted of ceramics and the occasional coin. Particularly noteworthy was an oyster shell with a not fully developed pearl fused onto the shell. (Figures 2.21, 2.22). A discrete fire place was also found in Space 058.

Collapse in all of the rooms appears to reflect natural decaying processes, suggesting that the buildings were left open and fell down gradually. A large spread of broken ceramics in Space 045 suggests the *in situ* destruction of one or two large (water) storage vessels, which suggests that the room may have been used as a storage room towards the end of its use-life (Figure 2.23). During the beginning of the abandonment Space 035, the north-south corridor was blocked at the southern end, making it in effect an additional, narrow room. Numerous fish bones discovered here suggest it may have been used for processing fish.

As parts of this building decayed, Space 034 was used as a dumping area for residue from a presumably not as yet further clarified manufacturing process (Figure 2.24). A vivid orange brown deposit was found in-filling this room. This deposit was previously determined to have a high iron content, when it was found to the north of Space 003 (see last year's report). These related processes of decay, abandonment and dumping of material represent the last stage of Phase 05 excavated during this season in ZUEP02.

Figure 2.19: Phase 5 excavations looking SE, showing spaces 43, 68, 34, 35 and 45 (left to right)

Figure 2.20: Space 45 showing the collapsed spanning archway.


Figure 2.21: Oyster shell with fused pearl – found on the surface of Space 58

Figure 2.22: Oyster shell in-situ in the NE corner of Space 58

Figure 2.23: Crushed in-situ water storage jar on the floor of Space 45

Figure 2.24: SE view showing the unexcavated Phase 4 Space 11 above the Phase 5 architecture Space 43

### 2.2.3 Phase 4

Phase 4 was previously characterised as an 'intermediate stage' in the occupation of Al Zubarah. It follows on from the seeming abandonment and decay of Phase 5, which probably corresponds to the devastating effects of the 1811 attack on the town (Figure 2.25). This phase consists almost entirely of minute traces of settlement: postholes, stakeholes, *tannurs* and other fire places, single-course flimsy walls and patchy occupation floors. These mark what remains of ephemeral structures, such as tents or *barasti* in the settlement, which sometimes utilised parts of old, abandoned buildings. This picture was reinforced by the findings from this season's excavations.

The earliest of these features were cut into the orange-brown industrial waste discussed above, but these were quite shallow and are likely truncated. The next group of features were contained beneath a widespread levelling deposit and occupation horizon. This levelling deposit was brought in immediately prior to the construction of the Phase 3 architecture. Cut features appear in distinct clusters throughout the excavation area, but they are difficult to define as individual structures. Many postholes and stakeholes appear to have a quite random spatial orientation; although windbreaks built using stone and stake/post-holes were identified. It is very difficult, if not impossible, to clearly delineate contiguous arrangements, as many of these features may relate to multiple episodes of tents or other ephemeral buildings being situated in this area (Figure 2.26).

Although Phase 4 does not represent a complete hiatus in the settlement sequence of ZUEP02, it shows that the effects of the 1811 attack were likely quite dramatic, with much of the earlier stone architecture being abandoned, left open, or being replaced by tents and windbreaks.

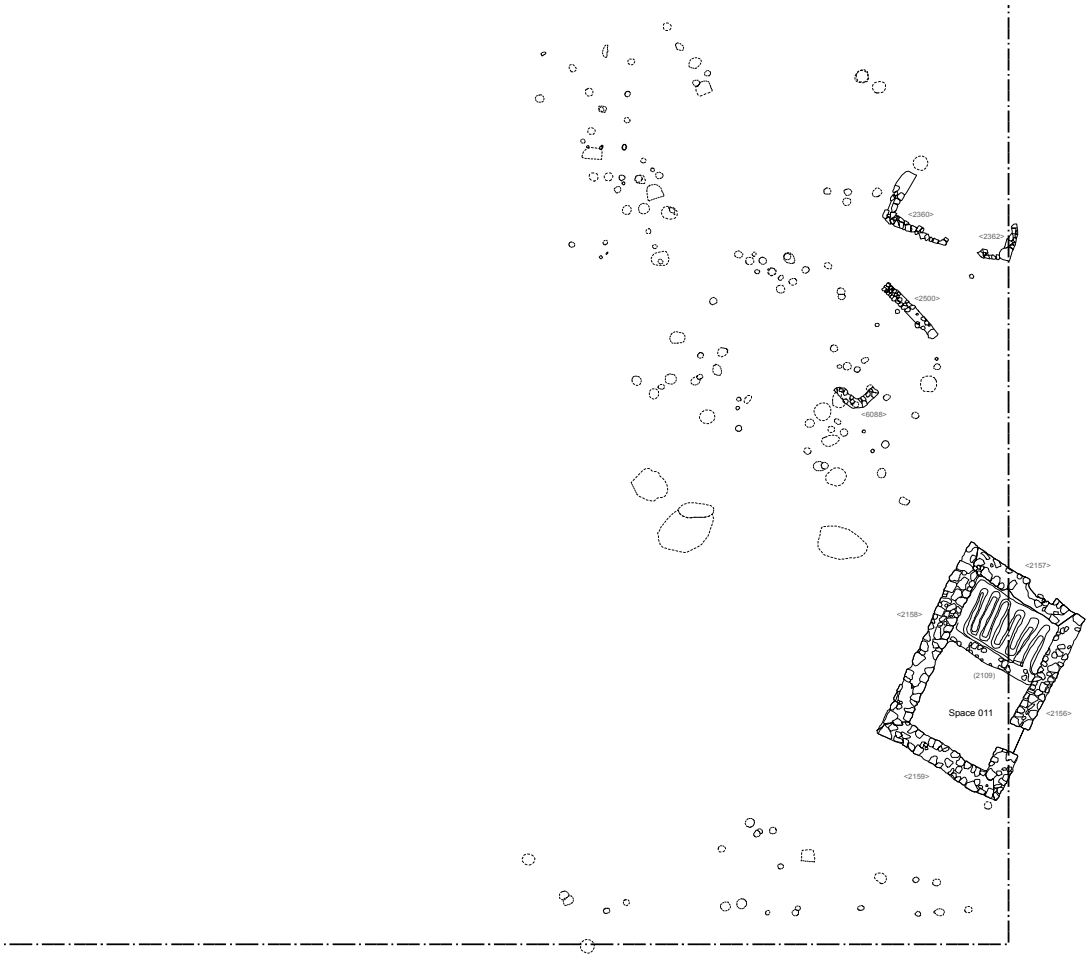



Figure 2.25: Phase 4 open area plan showing the numerous cut features, two temporary structures and the date processing room Space 11

Figure 2.26: Phase 4 - SE view of temporary structure marked by low-lying stone surrounds

### 2.2.4 Phase 3

The majority of the archaeology excavated during 2010-2011 in ZUEP02 was linked to Phase 3. Some architectural elements of this phase had already been removed during the 2009-2010 season, while new elements were added in the northern extension where additional Phase 3 architecture was found (Figure 2.27).

In the south-western part of the excavation area only one room (Space 029) was excavated, leaving the date storage room (Space 011) behind (Figure 2.28). The date storage room will be excavated and removed in the forthcoming season. Space 029 was constructed in much the same fashion as almost all the Phase 3 architecture. Walls were rubble-built, with a stone core faced with larger selected beach stones bound by a loose mid grey or yellowish brown sand-and-lime mortar. Floors all consisted of shell layers, which appeared burnt in places. A small sub-dividing wall was built following the initial use of the room, splitting the room into two small square-shaped rooms. The building's main entrance was located to the west.

A large proportion of the Phase 3 architecture is located in the western part of ZUEP02 and most structures had already been recorded in the 2009-2010 season, only requiring removal to pursue the stratigraphy beneath. This included spaces 007, 008, 009, 010, 033, 022 and 023. The trend is again one of 'piece meal' architecture, which is characterised by the use of poorer building materials and less carefully applied construction techniques when compared to Phase 5. This is an impression that is concurrent across the excavations in Al Zubarah. The first rooms to be built in the western area were Space 007 and 009 to the north, adjacent to the east-west running road Space 003. An enclosure wall linking these two spaces and enclosing a more or less square shaped courtyard was then built. The enclosure wall does not survive in its entirety having been partially demolished in the south as the compound was expanded. This was likely coupled with the construction of the large enclosed Space 005 to the south.

This latest extension of the enclosure was directly linked to the construction of the additional Space 008 to the north. When the compound was extended eastwards, Space 002 became part of a 'north wing' of this enclosed area. This was followed by the construction of two small rooms (Spaces 010 and 033) located south and north of Space 007 respectively. To the west of Space 007 a further room was constructed (Space 023), which was then connected to Space 007 by the construction of a further small room (Space 022). Both were associated with internal and external shell surfaces that served as floors. Space 022 was constructed in a much more flimsy fashion than either Space 022 or Space 007 to the east. A hard metalled surface was removed in this space during the last season, which may reflect a regular, heavy-duty use of the room.

The area to the east of this compound outside Space 022 and 023 saw a considerable amount of activity. This is attested by two *tannurs* that were built in the open, but sheltered from the winds by existing walls. Additional fire pits and a dumping area consisting of ash, fauna and some ceramics were located around the larger of the two *tannurs*

Returning to the compound itself, Space 009 saw a considerable amount of activity over its use-life. A southern doorway provided access to and from the enclosed yard (Figure 2.29), and it contains multiple floor levels which were cut by multiple, discreet pits, postholes and door socket/pivot holes. The constructional quality of this room can be considered as somewhat better than most of the other Phase 3 architecture, with more high-quality building material being used and more carefully applied wall rendering. Twenty cut features truncated the vast majority of the earliest floor level, which only survives at the eastern end of the room. Notable amongst the cut features were a row of three post holes that probably represent an internal sub-division of the room by a beam and palm frond construction. Several fire/hearth pits were found in the north and eastern parts of the room, in addition to one hearth-pit in the south-eastern corner.

These twenty features were sealed by a shell floor laid across the room. One dumping pit was cut

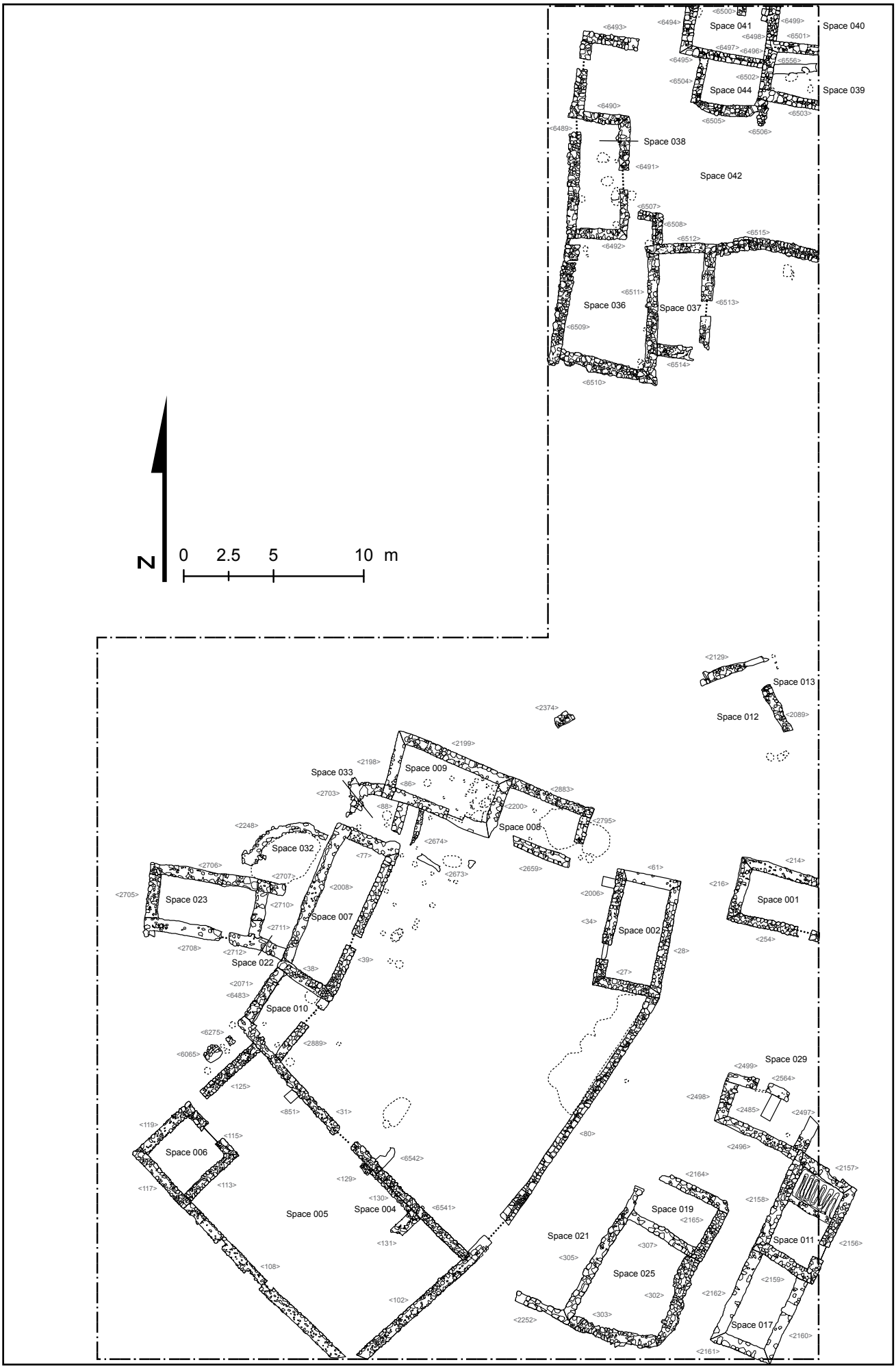



Figure 2.27: Phase 3 architectural plan

Figure 2.28: Eastern view of Space 29

Figure 2.29: Threshold in the southern wall of Space 09 allowing access to the courtyard

through the floor containing copious amounts of ash. One post hole near the southern doorway suggests that a new doorway may have been installed at this point. Two successive floors were then laid in the room, but only the latest of the two covered the whole extent of the room. Following the laying down of the first of these two later surfaces, another group of features that included post- and stakeholes were excavated, which may represent yet further subdivisions of this room. The last floor to be laid in this room produced evidence of only a single *tannur*.

Space 008 was a late addition to this compound in Phase 3 (Figure 2.30). It was built atop a levelling deposit covered by a mortar render. These were sealed beneath a floor, on top of which this room was built. Prior to construction three postholes, a larger pit and *tannur* indicate that this area saw some activity. A series of features – excavated in the last season – cut the remnants of the earlier floors in this room. Situated between Space 009 to the north and 007 to the south was the small room Space 033. This was a very ephemeral structure, which appears to have been heavily 'robbed out' with only a single course of stone remaining in place.

Space 010 was created in a similar process of construction as its counterpart to the north (Space 033) (Figure 2.31), with the insertion of a northeast-southwest running wall between the existing outer compound wall in the south and the southern wall of Space 007 to the north. Two small rectangular openings (vents?) were opened up above ground level in the western wall (Figure 2.32). A pit and an occupation floor were excavated inside this room, with access from the courtyard to the east. There is little understanding of the function of the two openings in the wall, but is likely that they provided some kind of ventilation for this area, as they are somewhat too small and too low above ground to act as windows.

Apart from the construction and activities attested in these rooms, investigations also targeted the courtyard area, where several Phase 3 features were excavated this season. These consist of series of pits, post- and stakeholes and *tannurs*. Many of the pits and fireplaces appear to be associated with domestic food preparation. Some of the stake- and postholes mark the locations of windbreaks and shelters. These features reflect considerable activity in the courtyard area, and were sealed beneath further occupation levels.

In the northern extension, further architecture belonging to Phase 3 was revealed and recorded, but not yet removed by the end of the season. While the Phase 5 architecture in this northern part appears to relate more closely to the *suq* previously excavated by QMA, the Phase 3 architecture here has a more random, domestic function. Like the predecessor buildings in this area, this architectural phase is also aligned north-south, although there appears to be somewhat greater deviation to this alignment. Eight rooms (Spaces 036, 037, 038, 039, 040, 041, 044, and 046) were revealed and documented. They form a single complex which is enclosed by a boundary wall around a courtyard. While the western limit falls within the excavation area, the eastern part is beyond the limit of excavation (Figure 2.33).

Three of the rooms (Spaces 037, 038 & 039) were constructed as part of one development, while Spaces 041 and 040 were built somewhat later. Space 044 was constructed even later than that. Space 037 appears to have been used as a storage room (Figure 2.34), as reflected by a wide range of ceramic sherds broken *in situ* and strewn across the floor of the room. Space 038 is a rectangular room which, on the other hand, appears to have functioned as a cooking area (Figure 2.35). A shell floor covered the entire internal surface of the room, while a wide range of domestic waste and material culture was strewn across the floor. A small fire pit/hearth was located against the eastern wall, which was backfilled and re-cut by a *tannur* pit. Two further pits and a posthole also cut this earliest floor. The room was then resurfaced with a compacted sand-silt floor, which reflects trampling. Two pits were cut into this floor, including one fire-pit and one proper *tannur*.

Figure 2.30: Western view of Space 08

Figure 2.31: Eastern enclosing wall forming Space 10

Figure 2.32: Western wall of Space 10, showing the two inserted vents

Figure 2.33: Aerial overview of the Phase 3 architecture in the northern extension area

Figure 2.34: Space 37 storage room (Phase 3), in the northern extension

Figure 2.35: Space 38 cooking area, Phase 3 room in the northern extension

Space 039 was only partly exposed in plan, as it continues eastwards beyond the limit of excavation (Figure 2.36). The western part of the floor, which slopes down towards the centre of the room, was burnt. Two firepits and a single posthole were cut into this floor, filled by ashy deposits with inclusions of animal bone. This appears to be yet another instance of a food preparation/ cooking space. However, the peculiar appearance of the floor suggests that the function may have been slightly different. It is possible that this may have been a fish curing or smoking room.

In the southwest corner of the compound Space 036 is a sub-rectangular room (Figure 2.37). The primary floor consists of a thick shell and sand floor, which produced a rich assemblage of material culture and associated finds. This appears to reflect a slow accumulation of occupational detritus combined with trampling. Three cut features (a firepit, *tannur*, and a posthole) truncated this floor. Once again, it appears that these rooms served broadly domestic functions.

The small room labelled Space 046 is located to the northeast of Space 036 and appears to have served as an entrance corridor or portico leading into Space 036. The internal space of this small room was covered by a trampled occupation surface, which contains a mixed assemblage of material culture, associated finds and charcoal inclusions. A single posthole and a firepit were cut in the southeast corner of the room. The latter was cut by a *tannur*, which re-used sherds from a storage vessel (Figure 2.38).

North and northwest of Space 039, two further rooms were constructed (Spaces 040 and 041) (Figure 2.39 [includes relationship with Space 044 and 039]). Neither could be fully exposed in plan. Due to the incomplete lateral exposure it is not fully ascertained that Space 040 is indeed a room – it may equally be a courtyard. Again, a sand and shell surface represents the floor surface, which was cut by two features (a pit and firepit – both of which are as yet unexcavated). A sand and shell surface was laid over this floor thereafter, although this was discontinuously spread across the area. Space 041 is a rectangular room in the northeast corner of the northern extension. Access from a space to the north (beyond the limit of excavation) exists, with a second possible entrance in the southern wall. This entrance appears to have been blocked up later on. Due to the construction of Space 044 to the south it is unlikely that this entrance was in use for very long. Space 044 is a small rectangular-shaped room which was one of the last additions to the building. The interior floor surface was virtually indistinguishable from the courtyard floor layers, and the function of this late addition room is as yet unclear.

The courtyard which is surrounded by this group of rooms (Space 042) is an irregularly shaped open space (Figure 2.40), which is characterised by the stepwise development of this compound. Survival of surfaces and floors in the courtyard is patchy and these patches are difficult to link across the entire space. Only one *tannur* so far is associated with the open courtyard, which was excavated to the west of Space 038.

The area between the compound of the northern extension and the rest of the previously excavated area of ZUEP02 to the south contains a surface deposit, which appears to have developed over a protracted period of time. It contains several burnt lenses, dumping areas, as well as copious amounts of fragmented material culture. Cutting this surface were several features, including a firepit and postholes, which may represent the remnants of a windbreak (Figure 2.41).

Following construction and occupation, Phase 3 architecture across ZUEP02 experiences a gradual decline. Material is dumped in what appears to now be disused buildings. Buildings were left open and decayed gradually, with little robbing of walls or reuse in evidence.

Figure 2.36: Space 39 small cooking room with ash floor and vents in the northern and eastern walls. Insert shows the vents in the west wall

Figure 2.37: Space 36 – a later domestic addition to the compound - and Space 46 - a small entrance portico to the north allowing access to Space 36 - form the centeral courtyard.

Figure 2.38: Tannur located in the SE corner of Space 46 (entrance portico)

Figure 2.39: Architectural group including; Spaces 39, 40, 41 & 44 located in the NE corner of the Northern extension area.

Figure 2.40: SE view of the Courtyard Space 42 in the northern extension

Figure 2.41: Firepit and postholes forming a wind break located in an open area to the south of the compound.

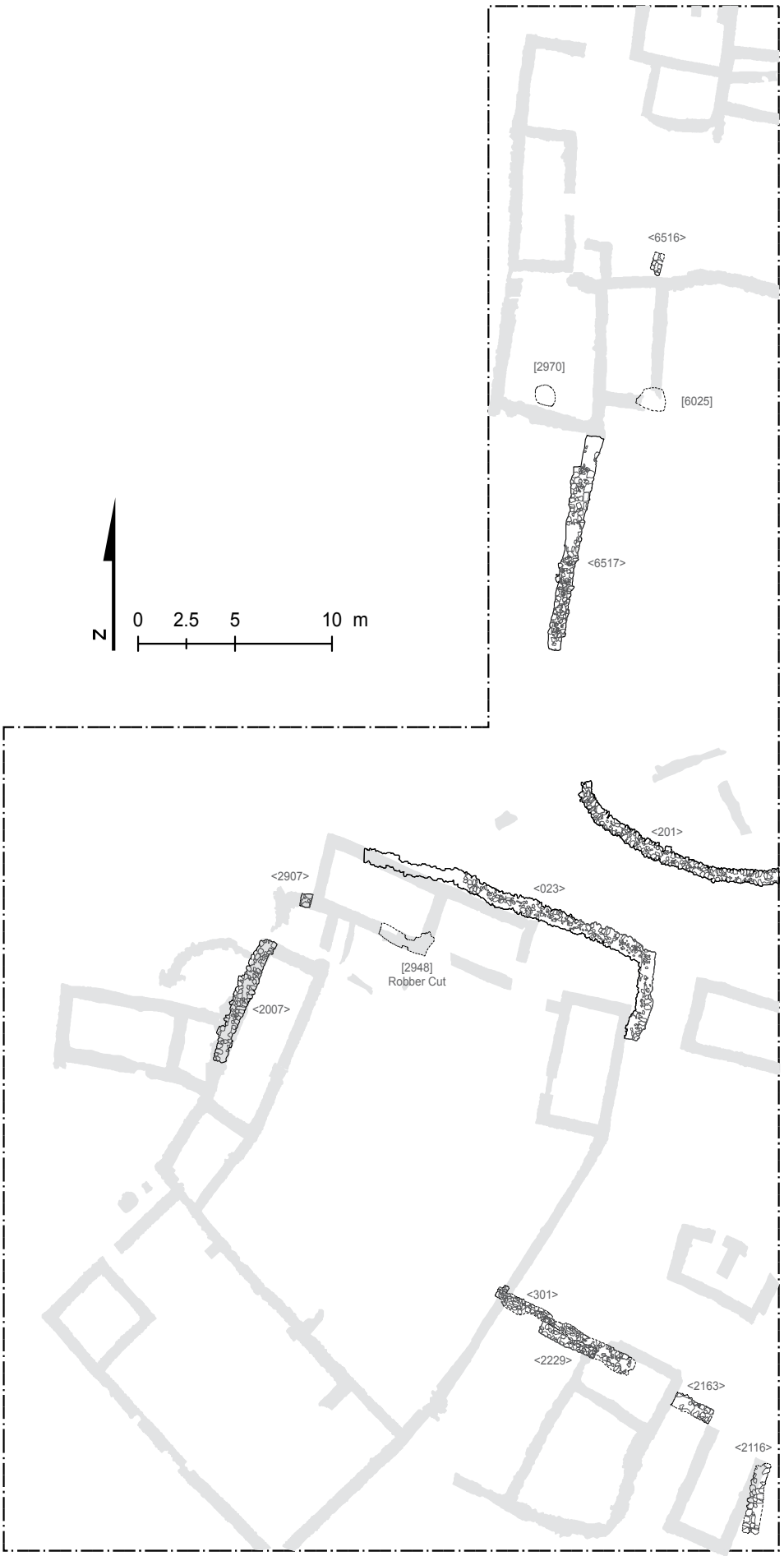



Figure 2.42: Phase 2 architecture.

### 2.2.5 Phases 2 & 1

Evidence for these phases is ephemeral and was only encountered in the northern extension (having been excavated and removed in the southern main area during the previous season of excavation). It consists of some Phase 02 pitting into the rubble infill, as well as Phase 01 accumulation of aeolian silts and sands and some localised trampling (Figure 2.42).

### 2.2.6 Conclusion

Work in ZUEP02 made significant progress over the course of the 2010-2011 season, with much of the Phase 03 architecture removed in the southern part of the excavation area, and a link being created with the *suq* in the northern extension. Phase 5 architecture continued to be exposed and we are gaining a better understanding of the kind of structures that can be expected to be fully revealed in the future.

ZUEP02 continues to produce evidence for the most crucial phases of Al Zubarah's occupation and, together with ZUEP01, is one of the few areas in which excavations have produced a full stratigraphic sequence detailing the history and development of the site. Nevertheless, excavations are at an intermediate stage in ZUEP02 and further work is required to complete the full exposure of Phase 5. Further progress on this will be made during the next season of excavation.

The emergent picture of the Phase 5 architecture appears to confirm that we are looking at a broadly commercially orientated group of spaces and buildings here. It seems that further excavations will reveal more of the *suq,* allowing us to link the present excavations with the previous QMA excavations stratigraphically. This will provide a fuller understanding of Al Zubarah's economic and trade activities within a socio-political context. On the surface a look at some of the Phase 5 walls in ZUEP02, particularly in the southern area, suggest that we may be dealing with the footprint of a commercial warehouse in this area, which would work well with the idea of a larger market district. However, further excavations in the main area and in the northern extension have to be undertaken to clarify these issues.

## 2.3 Al Zubarah Excavation Point 4 (ZUEP04)

*Tom Collie*

### 2.3.1 Introduction

The site at Excavation Point 4 (hereafter ZUEP04) is located at the southern end of Al Zubarah (Figure 1.1, p. 5) and focused on a large compound enclosing rooms and courtyards surrounded by perimeter walls with corner towers. This was divided into eight separate areas around a centralised courtyard, which appears to have been circumnavigated by streets and passageways (Figure 2.43). The excavations from this season examined the entirety of one of the eight compound areas (hereafter named Precinct-Section 8), to determine its layout and function within the compound as a whole (Figure 2.44).

The archaeology revealed has been organised into the four phases previously established for ZUEP04 in season 2009-10. The oldest phase pertains to pre-construction activities and the natural geology. The following phase represents the construction of the building. The next phase relates to the occupation of the building including architectural renovations, dumped midden deposits and occupation deposits and features found within the internal rooms. The final phase includes materials from architectural dilapidation and degradation along with modern overburden deposits.

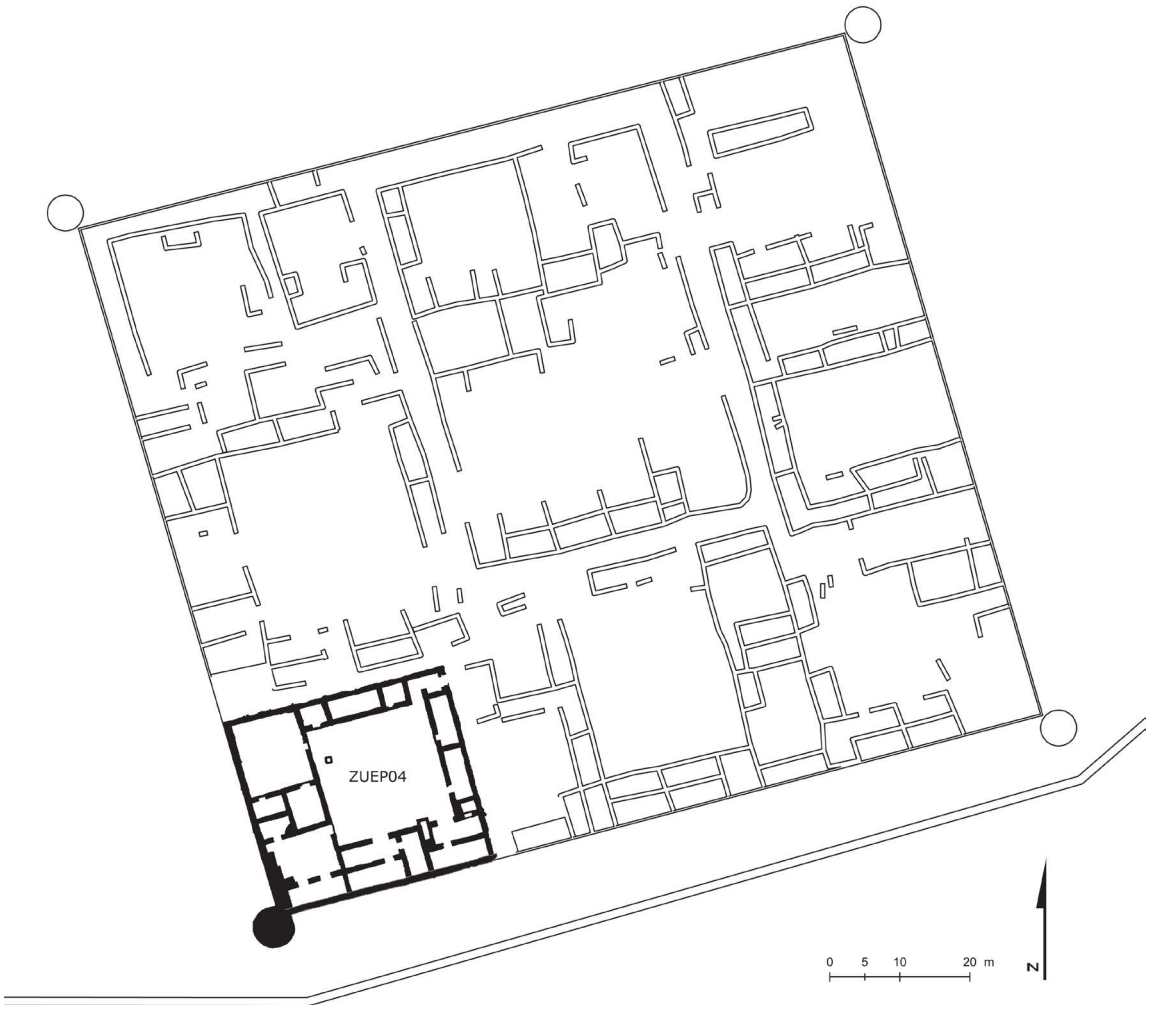



Figure 2.43: Plan of the Precinct Area

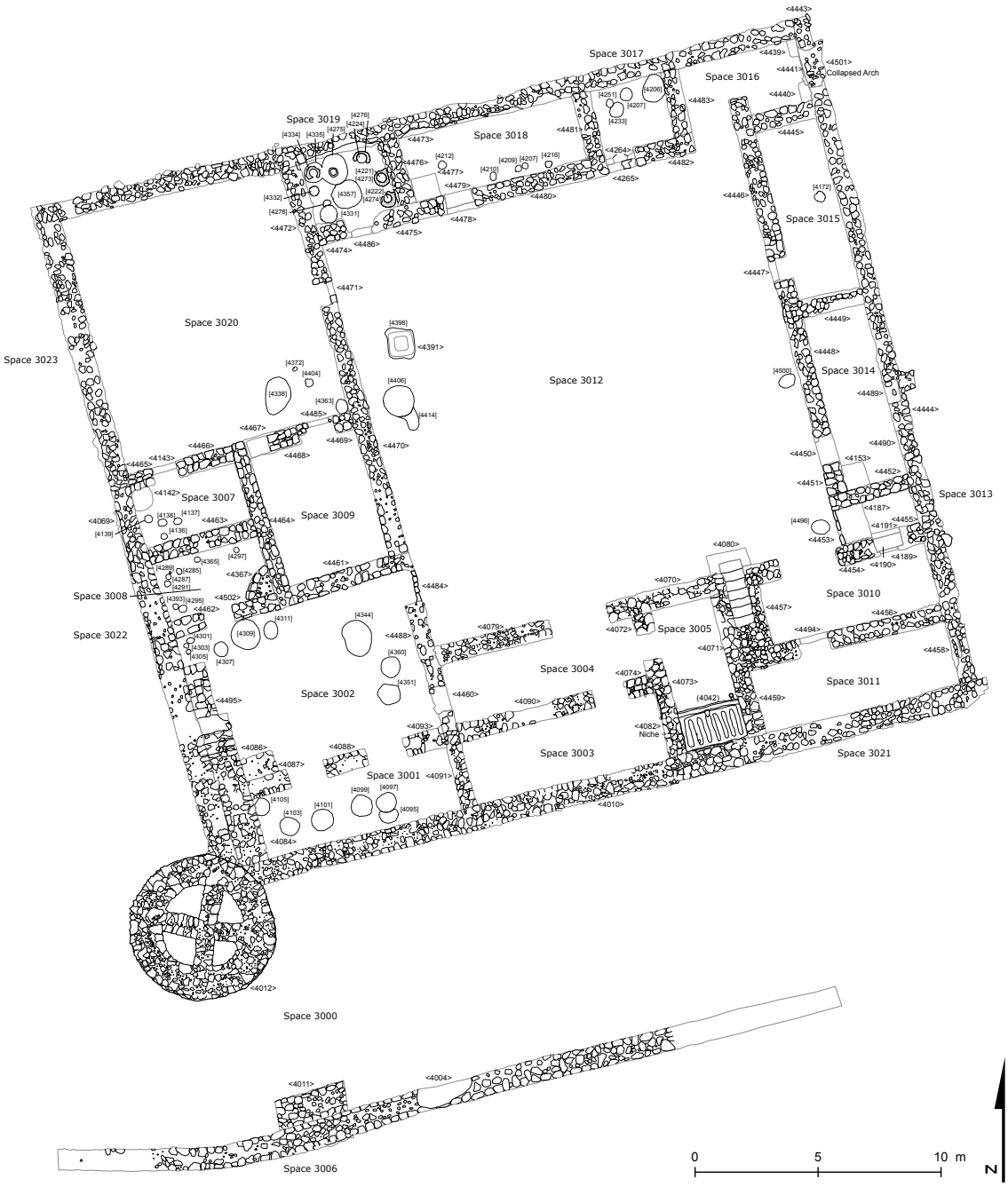



Figure 2.44: Post-excavation plan of excavated Precinct-Section 8

### 2.3.2 Phase 4: Pre-Construction and Natural Geology

Phase 4 details features and deposits that existed before the construction of the compound. Little evidence was found from this phase, purely because most remaining architecture was left *in situ*, which prevented any observations of the stratigraphy below. This differed from season 2009-10 where archaeological features, believed to pre-date the building construction, were discovered. Floor surfaces and walls were not excavated and therefore any features beneath were simply not seen. Natural geological deposits were evident in the sides of pits from the courtyards and in Space 3019. However glimpses through intrusive archaeological features were inadequate to make large scale conclusions about the nature of the geology prior to building construction. Further work would be needed here to gain greater insight regarding pre-construction activity.

### 2.3.3 Phases 3 & 2: Construction and Occupation

Descriptions of these important phases are combined in the present report. Ideas on general construction order and planning are described below followed by an account of architectural features and occupation deposits, categorised by architectural location (cardinal sides) and also by space number.

*Precinct-Section 8 general parameters*

Previous excavation revealed that both the corner tower and the westernmost north-south running precinct wall are contemporary features (Figure 2.44). Subsequently, the southernmost east-west running parameter wall joins the tower at foundation level. Two long, internal constructions further complement the external compound walls, forming a regular, square-shaped area. Together these four walls formed the architectural limits of Precinct-Section 8. The main northern and eastern walls measured 25 metre and 31.6 metre respectively. The outer precinct walls were longer and continued past the limit of excavation. The contiguous architectural units indicate that the compound in its entirety may originally have been organised into these set sections as opposed to being allowed to develop organically within the main walls. This clearly shows that the fortified compound was constructed as part of one overall event and was a carefully planned and organised structure.

*Internal Wall Construction Order*

Some observations of the architectural plan of Precinct-Section 8 can be made relating to the order of space construction. It seems that wall <4488>, partially uncovered in the excavation from 2009-10, forms part of an internal architectural line that stretches from southernmost outer precinct wall to join the northernmost perimeter wall (Figure 2.24). This internal line runs perpendicular to Precinct-Section 8's southern and northern-most perimeter walls and is parallel to its eastern and western sides. It is instrumental in forming the basis for the precinct's internal spaces and indeed governs the layout of the main courtyard Space 3012.

Both the northern and southern extents of this courtyard (Space 3012) are formed by lines of walls that run perpendicular to, and indeed butt against, the previously built western line. These southern and northern walls delineate rooms which skirt the edge of this part of the fortified compound. Most of the rooms on the southern side were excavated during the 2009-10 season (Richter 2011). Two more were revealed during this season. The northern side revealed merely three. After these sides were built the eastern rooms were constructed, which produced an additional entrance space. The eastern side holds another three rooms which includes a small space dominated by a large *hammam*. The western side is also subdivided into two smaller courtyard areas along with four room spaces.

*The Western Side*

In total, the western side included Spaces 3001, 3002, 3007, 3008, 3009 and 3020. Spaces 3001 and 3002 were excavated in season 2009-10 and work in these areas was continued. Two mini-courtyard areas (spaces 3002 and 3020) dominate the interior space of the western side. They appear in both the northern and southern areas and are separated by rooms 3007, 3008, and 3009. With the exception of Space 3009, all interior walls and floors hold no signs of rendered plaster. All walls were constructed using unevenly coursed roughly hewn beachstone (AG1-3 & BJ3, Hoffmann et al. 2011) and bound with a grey sandy mortar. Indeed, the northern mini-courtyard was covered in shell and sand, similar to the main courtyard space, suggesting that it was a similar outside space. Conversely, the southern mini-courtyard had a hard compact sandy silt surface. Space 3008 shared the same type of floor and indeed had no threshold step leading into the main area of 3002. It seems it was designed to be left open and maybe ventilated.

*Space 3001*

Architecture from Space 3001 was fully revealed in excavations from season 2009-10. Work this season focused only on the discrete features found lying at the base of the room. Excavation of these features, suspected to be *tannurs*, showed they were firepits. The intense ashy and charcoal fills suggests the presence of great heat and prolonged burning, especially since the archaeological strata below had changed in consistency and colour. Since they all truncated the same surface and were situated in one neat line, it is possible that they were operated simultaneously. If this was the case, it would indicate a serious demand for heat and for whatever was being heated (water/food). This supports the idea puported in the 2009-10 season that Space 3001 was some kind of kitchen, left open due to the intense heat, which was utilised by the rest of the precinct-section. Moreover, a view of the sides and base of these pits revealed that more burning activity had occurred in the layers stratigraphically beneath the floor surface. Further excavation will be needed here to discover the nature of these earlier burnt deposits.

*Space 3002*

Space 3002 was partially excavated in season 2009-10 and work continued here this season to reveal the room's full extent. This space was revealed to have been truncated by multiple pits and postholes. The larger pits were believed to have been dug to gain access to the natural deposits to provide new material for interior floor surfaces. The purpose of postholes in the far north-western corner is unclear, but they bear resemblance to postholes in Space 3008 in both shape and extent. What is certain is that these pits scarred the floor surface of Space 3002 indiscriminately.

Two masonry features were revealed within this space. The first was a masonry plinth feature <4086> uncovered already in the 2009-10 season. The second feature was a block of beachstone, which butted the major staircase to the south and also main western wall. It was believed to be a small staircase leading to the wall's top surface, although this seems strange when considering the presence of the larger staircase directly to the south. Further excavation will be needed here to fully determine this feature's purpose.

The structural repair apparent in the eastern wall was re-examined and consequently redefined as a window cavity effectively linking spaces 3002 and 3004 (Figure 2.45)**.** This was made from a grey plaster render laid into the beachstone wall. It was very similar to a feature in Space 3009. These windows were similar to those observed in another fort in the vicinity of Al Zubarah, namely Qal'at Al Thaqab. Although this fort has been restored, domestic living spaces near the front gate had both one door and one window looking out into a courtyard area. Examination of the plaster work in the far southern corner uncovered the remains of wood, possibly from the window frame.

Figure 2.45: Window cavity <4460> in Space 3002

*Space 3007*

Excavation herein produced three sequences of deposits. The latest sequence contained thin layers of sand and shell, which formed a floor surface containing the extant remains of a small black vial (Figure 2.46). Beneath this lay a second sequence of similar deposits forming a floor surface which was truncated by four small fire pits possibly created for some minor cooking activity.

The earliest sequence contains the original surface of the room along with a gypsum plastered waterbasin in the north-western corner. Its base is tilted slightly towards the northern wall and has a 0.2m hole cut in the corner which presumably provided drainage. Indeed, on the other side of the wall in Space 3020, there is evidence of a hollow in the ground surface hinting at the presence of a soak-away similar to that found outside space 3013.

The original room surface is unusual since, remarkably, it still held the presence and indentations of footprints and reed-matting from its initial use (Figure 2.47). The basin and the matted-floor resembled a poor mimic of the other, longer rooms, which contain plastered floors and *hammams*. Indeed, this space shares another similarity with Spaces 3018 and 3014, since it too displays evidence of sandy shell surfaces cut by fire pits. This small room therefore introduces the argument that the rougher undecorated rooms of the western and northern sides fulfilled a more utilitarian, less representational, function.

*Space 3008*

As mentioned previously, Space 3008 shares the same floor surface with mini courtyard Space 3002 and has no threshold, suggesting that it was an open space. The features associated with the floor surface include eight postholes and a beachstone structure situated in the south-eastern corner (Figure 2.44). The postholes were curious since they were situated along the western and


Figure 2.46: Black glass vial found in Space 3007

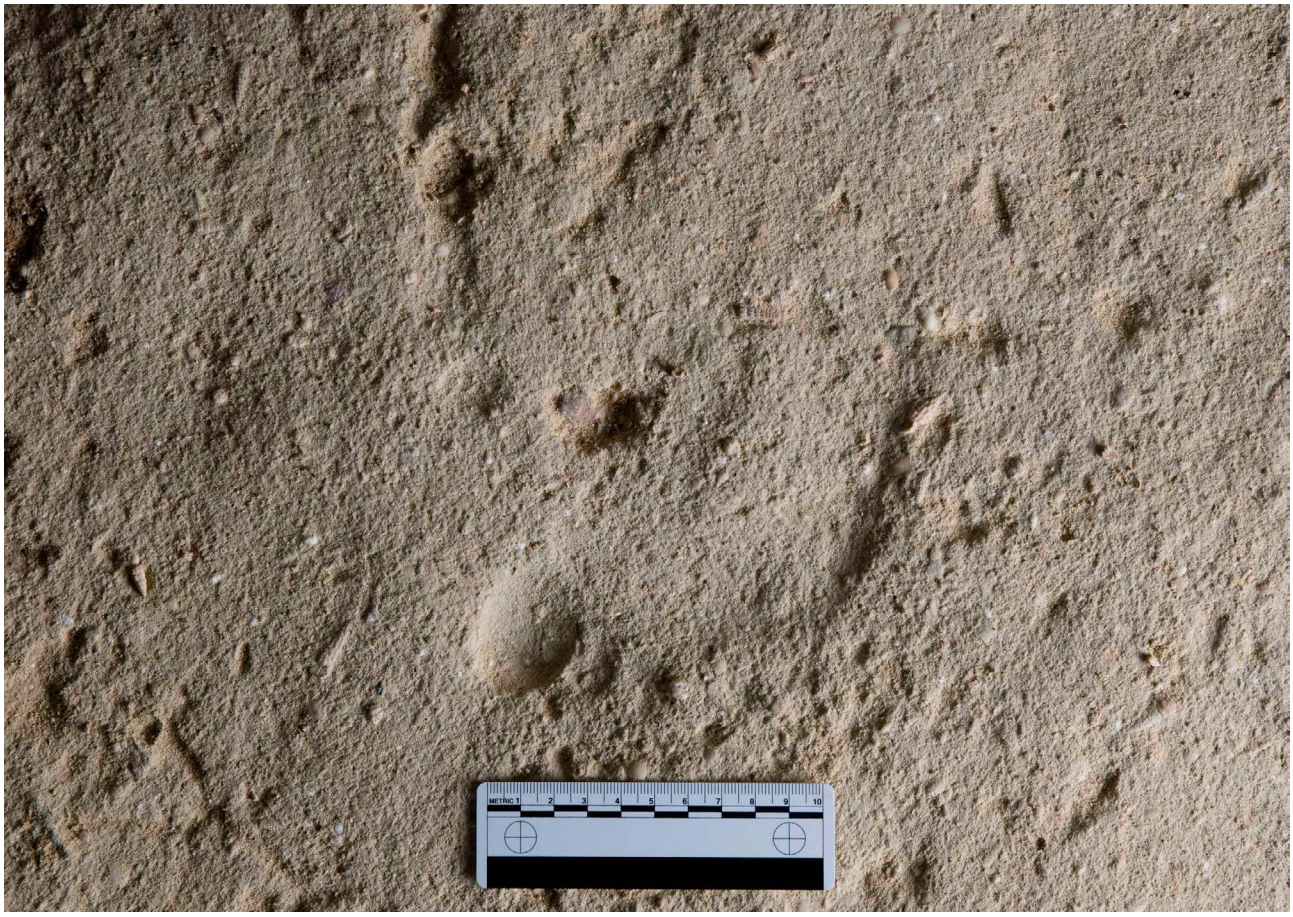


Figure 2.47: Footprint found in floor surface (4141) in Space 3007

northern interior sides of the room. Their form suggests that substantial posts were set inside but what they physically supported is uncertain. Their position in relation to the walls suggest that they may have had a structural purpose – possibly as supports for a canopy to provide shade. The beachstone feature in the south-eastern corner was interpreted as a low stone seat. However more investigation within this small room is needed to fully determine its function.

*Space 3009*

Room 3009 was very similar to Spaces 3003 and 3011 since it was completely devoid of occupation deposits. It differs from the surrounding spaces since its internal walls were plastered along with the floor. All decorative plaster features including the window in the north wall and the threshold, suggests that this big room may have fulfilled some important function on the western side. The window in the northern wall indicates that the room would have been filled with light in contrast to its neighbouring rooms 3007 and 3008, which were only illuminated through the doorways. The collapsed pillar lying inside (discussed in Phase 4) also pointed to a place of relative splendour.

Space 3009 is therefore an anomaly amongst a group of somewhat 'bare' rooms. It may have provided a focal point for those occupants functioning within the less luxurious spaces of the western side. This again introduces two levels in the condition of the interior rooms.

*Space 3020*

Excavations within the mini-courtyard space revealed a series of shell surfaces interwoven with occupation deposits and truncated by small pits. There were three sequences of deposits lying in the southern end of the courtyard, which became gradually more fragmentary and diffuse towards the north. The second sequence of hardened shell was notable in that it was truncated by a large pit filled with redeposited hearth material and contained two small coins. The first sequence consisted of a hardened silt surface, which was truncated by two small post holes. The earliest surface was left *in situ* and stretched from the southern end of Space 3020 through to the middle, whereupon it was covered by deposits from the northern end of the courtyard. These were patchy make-up layers for a courtyard surface and were interpreted as contemporary with the second sequence mentioned above. This hardened floor surface was an excellent archaeological horizon on which to stop work in 2010-2011 and resume work in the future, since it was distinct and well preserved.

*The Southern Side*

In total, the southern side included spaces 3003, 3004, 3005, 3010 and 3011. Only spaces 3010 and 3011 were excavated since the rest had been examined in season 2009-10 (see QIAH End of Season Report Stage 2, Season 1; 2011).

Spaces 3010 and 3011 displayed signs of high status domestic occupancy. Both rooms have plaster on their interior walls. Space 3011 has a plastered floor and two badly damaged niches set into both the eastern and western walls. The two rooms were separated by a plastered threshold step. They represent dignified internal domestic spaces, especially Space 3011, which was consciously separated from its northern neighbour by the well-constructed doorway**.**

Both spaces were bounded in the west by a large staircase. This has eight steps, which were built from beachstone, over-rendered with a hard brown sandy mortar, which is badly degraded. The staircase was cleverly constructed since it is supported by two buttresses, tied into the structure itself. This is combined with walls to the east to provide entranceways into Spaces 3011 and 3010 respectively (Figures 2.44, 2.48). The staircase provided access to an upper level, which explains the large quantities of collapsed rock and plaster-vaulting found from Phase 4. It also may explain the presence of the midden in Space 3021, which contains dumped deposits that ac-

Figure 2.48: Staircase <4457>

cumulated at a point directly outside the precinct wall, as if they had been thrown from a space situated above 3010 and 3011.

*Space 3010*

Space 3010 was completely covered by a hard sandy shell surface, which then spread 10m north into the main courtyard. Since all major courtyard deposits were retained for future excavation, this shell layer was not fully uncovered. However, a few observations can be raised. Primarily, it bears striking resemblance to the shell deposits found in space 3004, which were revealed to run into the main courtyard. Like space 3004, these deposits indicate that space 3010 was a transitional room between an exterior to an interior area. Secondly, the entrance to this space showed no sign of thresholds or door frames. It was open to the exterior and was as wide as the entrance to space 3004. Moreover, collapsed archway material found at this access point (discussed in Phase 4) again indicates that this room was open to the elements. Space 3010 was therefore interpreted as a passageway through to clearly-defined interior spaces.

*Space 3011*

This room shares a distinct similarity with Space 3003, since it displays no signs of occupation. Clearly this room was used for functions that did not damage the floor surface and perhaps indicates that this room was used differently than others. The niches is the eastern and western walls, plus the fine plaster walls and the deliberate attempt at separating this space with a threshold step from the neighbouring room to the north, all point to the fact that this room was reserved for a specific purpose.

*The Eastern Side*

The eastern side includes Spaces 3013, 3014 and 3015. Their interiors were rendered with plaster and separated from the outside by plastered thresholds. They all formed neat interior rooms. The plaster floors from Spaces 3014 and 3015 seems badly damaged and degraded revealing the flag stone foundations beneath. Conversely, Space 3013 seemed well-preserved.

*Space 3013*

This room was unusual and differed from the other rooms in the precinct. Its western wall was not constructed from the typical roughly hewn beachstone that is so common elsewhere. Instead, it was constructed from aeolianite, a porous limestone (stone type FR1, see Hoffman et al, 2011) (Figure 2.49). The wall formed the western part of a gypsum-plastered *hammam.* It was the only wall in the entire excavation area where a distinctly different building material was used. It was

Figure 2.49: Hammam <4187> in Space 3013

probable that the wall was made deliberately thin simply because it aided the function of the washing facility itself. Drainage from the *hammam* into the nearby sinkhole would have been quicker and easier if material did not have to travel a long distance – the *hammam* therefore would have been built as near to the drain as possible. The feature spanned the entire western end of the small room. The *hammam* in the neighbouring room also drained into this and then fluid from both rooms ran under the thin limestone wall and into the nearby soak-away.

Other features within this space were therefore geared to the prime function of this room. A raised line of stone across the doorway effectively formed a recess and was believed to help keep water within the confines of Space 3013. No occupation deposits were found here. Only dilapidation material from Phase 1 was discovered crushed firmly onto the plaster floor surface. The contents of the hammam-drainage channels were excavated but no organic materials were found. This space seemed spotlessly clean, which either indicated its immaculate state while in use or the possibility that it was a wash-room. In view of the small size of the soak-away outside the wall to the west, it would seem likely that only liquids were channelled through the drainage system. Having a small sewage system within the confines of a finely decorated high-status domestic space seems impractical and unlikely.

*Space 3014*

There were plastered wall niches in this room's eastern wall similar to those found in Space 3011. Additionally it contained a *hammam* in the far south-western corner, which drained through to Space 3013. Excavation revealed that it was repaired or at least re-plastered sometime after its original construction. This *hammam* appears to have been for washing, due to its size and location. The drainage channel was filled with a grey brown silty deposit mixed with demolition rubble from Phase 4. This was sampled for organic material.

There were two distinct occupation events in Space 3014. The first covered the entire room and lay beneath the dilapidation deposits from Phase 4. It consisted of loose coarse shelly sand that would have formed a fresh and clean interior floor space. The second event consisted of a previous shell layer with associated occupation deposits. This was interpreted as a floor surface which had laid down to provide a usable platform covering a previously dirtier surface below. However, unlike the shell from the first sequence, it was patchy and badly damaged. The re-plastering of the *hammam* seems contemporary with this layer, since there was evidence of shell mixed into the plaster render at the very base.

Underneath these occupation events was a plaster floor on which an event of small *in situ* burning was revealed. Scars, cracks and fissures in the plaster at the northern end of this room were blackened demarcating a fireplace. It is likely then that the constant use of the room created a demand to renew and replace the floor surface culminating in the shell surface events found above.

*Space 3015*

There were few signs of occupation within this room. Space 3015 had a scarred, degraded plaster floor with evidence of ingrained charcoal staining. Small, dark grey patches of sandy shell and charcoal lay in the southern part of this room, possibly hinting at the last remnants of a previous shell floor layer. However, as the layer is only 0.02m thick, this idea is tenuous. It is more likely that the occupation sat directly on the plaster floor. Indeed, the presence of a small *tannur* truncating the floor supports this theory. The *tannur* was filled with two ash deposits, which contained charcoal and fishbone. Another two small ashy deposits were found lying on top of the floor nearby. All deposits and features within this space pointed to direct use of the plaster floor, perhaps explaining its poor condition at the northern end.

*The Northern Side*

The northern side included Spaces 3017, 3018 and 3019. It was different since only one of its three rooms displays the high-quality plaster decoration that is common in both the eastern and southern wings.

Space 3017 and Space 3019 were two very small rooms that were not internally plastered. Space 3017 had an occupation surface of coarse gritty sand. There seemed to be no floor surface within the far western Space 3019 and features appeared to truncate natural geological sand and shell. Both rooms had large plastered thresholds and seemed entirely functional. They are markedly different to the lavish domestic settings of the other eastern and southern spaces. Their size and lack of decoration point to areas of storage or production, as opposed to domestic dwelling.

Space 3018 was more akin in size and function to those rooms revealed on the eastern side, specifically Space 3014. It had a deep threshold step which was constructed from beachstone and then covered in a plaster render. The plaster render clearly overlapped original plaster on the interior walls (especially evident on the eastern side) and also sat upon a lower layer of shell. It was clear then that this step was added to the precinct during occupancy, much like the plastered door posts in space 3017. It contains a large *hammam*, well-preserved plastered walls and a slightly scarred plaster floor. The inclusion of the these smaller rooms to the northern side introduces the idea that it fulfilled more functional roles than the south and the east. Like Space 3009 on the western side, Space 3018 seems to be the only northern room designated to some form of high-status living.

*Space 3017*

The stratigraphy found herein was distinctly different from the other interior spaces and consisted of three sequences of archaeological features and deposits. The first sequence lay directly beneath the dilapidation deposits of Phase 4 and contained large dumps of shelly sand containing large sherds of smashed black pot. Pottery from these deposits was also seen outside room 3017 in the central courtyard (see discussion for Space 3012) in a large shattered spread. Collectively, these deposits contained sherds from massive vessels that were believed to have sat in storage pits. They had been left lying shattered both inside and outside of Space 3017.

The second middle sequence contained two large pits that truncated an occupation surface. The two pits were very large and were both backfilled with material containing large sherds of black pot identical to those in the stratigraphy above. These pits had contained large vessels which were robbed out and then smashed.

The pits truncated an occupation surface comprised of trampled shell and rare small charcoal flecks. This was contemporary with a renovated doorway consisting of plastered doorpost settings and a plastered threshold, suggesting architectural repairs during occupancy. Similar activity was exemplified by threshold features in Space 3018. A further two surfaces were revealed below the threshold renovations. The earliest floor surface consisted of coarse compact sandy silt and was left preserved *in situ*. It had been truncated by an oval shaped pit containing a charcoal rich fill.

*Space 3018*

Space 3018 contained two sequences of clean shell with associated occupation debris. The first lay beneath the dilapidation deposits from Phase 1 and is contemporary with building additions made to the threshold step. The lowest sequence contained a layer of shell which covered the entire room and is believed to renew and replace the plaster floor below. It was truncated by two small fire pits. Below the shell, evidence of similar pits were seen scarring the plaster floor. The fires cut into the shell layer were placed in almost exactly the same positions as the original three, which scarred the plaster floor. It seemed these features had an established place in this room and

were repositioned almost exactly even after a fresh layer of shell obscured their original positions.

Space 3018 shared many similarities with Space 3014. Both have *hammams*. Both have two series of shell floor surfaces. Both have evidence of interior small fireplaces. The main difference was that the plaster floor in Space 3018 was in a far better condition than that within Space 3014. These similarities may indicate that both spaces had similar functions where light was required and cleanliness was a necessity – perhaps this evidence points to a place of a reception room.

*Space 3019*

Features and deposits within this small room indicated the occurrence of intense cooking and burning activities. Excavation revealed three sequences of events dominated essentially by the presence of *tannurs.* The first sequence contained detritus from the dilapidation deposits of Phase 4 mixed with burnt, charcoal-filled deposits. This sequence effectively formed an interface layer between the occupation of Phase 2 and abandonment of Phase 1. Beneath this lay a second major occupation deposit which was truncated by four *tannurs* and covered in black, ashy deposits. The third sequence consisted of more pits and *tannurs* which directly truncated the natural geology.

The four *tannurs* all contained multiple fills of ash mixed with silty sand and charcoal (Figure 2.50). One *tannur* had particularly damp fill deposits suggesting that this feature extended down to the water table. Additionally, two further dumps of blackened ash and silt were found lying near the tops of these *tannurs*. They were interpreted as more clean-out from the ovens. These *tannurs* differed in depth, the largest measuring 0.51m and the smallest 0.24m deep. They were wider at the base than at the top, presumably to withhold heat within the vessel itself. Indeed, the fabric of the *tannurs* looked extremely robust and in some cases very thick. They truncated a deposit that was interpreted more as an occupation deposit, as opposed to a formal floor surface due to its consistency, compactness and finds content. It may have been formed by material cast-out from the *tannurs* and then compacted into the ground by constant use of the room.

Figure 2.50: Tannurs cutting into occupation deposit (4208) in Space 3019

Figure 2.51: Tannurs left in situ in Space 3019 for future excavation

The earliest sequence of deposits and features were revealed to directly truncate the natural geology below. They included another series of *tannurs*, fire pits and dumps of blackened ash (Figure 2.51). These were interpreted as the original cooking facilities that preceded those found in the second sequence. One pit was noticeable because it was the only feature within the room containing animal bone, including those from fish, sheep and goat along with the remains of egg shell.

Unsurprisingly the features from the first sequence all occurred in the western half of Space 3019 whereas the *tannurs* from the following stratigraphic sequence were housed on the opposite side. Clearly this room went through two phases of use. The first phase utilised the western and middle of the room, using both firepits and *tannurs* to cook food. The second phase utilised the eastern half of Space 3019, which had not been disturbed by previous activity.

The space appears to have been a central cooking zone which may have complemented the fire pits in Space 3001. The burning episodes in Space 3019 seem far more intense and untidy than those in Space 3001. This space provides more evidence for the use of the west and north-west zones of the structure as dedicated service-duties areas, as opposed to activities that involved non-domestic activities. The walls from this space were undecorated and the narrow threshold step implied that the room itself would have been very smoky and dark if all *tannurs* were in operation at once.

*Entrances Space 3016 and the Main Courtyard Space 3012*

Space 3016 represents the main entrance to this part of the fortified compound (Figure 2.44). This L-shaped space in the northeast led directly into the central courtyard. Facing an opposite wall upon entry, and reinforced by a short segment of wall that protruded slightly into the room from the south, direct view into the courtyard was effectively blocked. The actual doorway was formed in a gap between the north-south running architecture and was complemented by a plas-

tered threshold flanked either side by two plastered steps (Figure 2.52). Both these features have two obvious round hollows worn into the stone, which can be interpreted as door sockets. The remains of an arch were observed in section in the as yet unexcavated deposits filling the doorway and alley, suggesting that this was an arched entrance.

Figure 2.52: Collapsed doorway in Space 3016

The main courtyard, Space 3012, dominated this part of the fortified compound, measuring 17m x 17m. The majority of the deposits within the main courtyard were left *in situ* for future excavation work. From the surface it appears that the courtyard's ground surface was comprised of a number of spreads of fine grey yellow sand and minute shell. The extent of these deposits was difficult to determine since the distinction between them was very slight. However, there were differences suggesting that the surface was often renewed, with patches regularly added and old floors re-laid.

A square plastered basin/trough was revealed in the north-western corner of the main courtyard. It remained an enigma since its true function within the courtyard could not be fully determined. It appeared to be some form of drain or water-feature. It was filled with smashed pottery, very reminiscent in fabric to the *tannurs* in Space 3019 and also to the shattered ceramic spread lying outside Space 3017. It was also covered by compact ashy deposits. The feature's close vicinity to Space 3019 and the ash trample covering suggests that the two are somehow associated. More excavation of this feature and the surrounding deposits is needed to fully determine its purpose. Its presence may indicate further features existing within the courtyard below the current limit of excavation.

Almost adjacent to the plastered basin was a large pit. Its steep sides and flat base, which sank below the present-day water-table, suggested at first this was some form of storage pit. Indeed, large sherds of a storage vessel were discovered in both upper and lower fills. However, since the pit was very close to the plaster basin, it may have been associated with it, perhaps to function

as some form of soakaway. Indeed, excavation of the pit revealed the northern extent of another pit feature, this time lower down in the stratigraphic sequence and buried beneath the higher courtyard deposits. This suggests major excavations occurred in the courtyard area and may indicate the presence of large drainage sumps. The true function of all these pits will need further investigation in the future.

*Exterior Spaces 3021, 3022 and 3023*

Excavation outside the outer precinct walls was kept to minimum due to time constraints and resources. Space 3021 is located outside the southern precinct wall directly to the south of Space 3011 (Figure 2.44). Excavations here aimed to reveal and document the extent of midden deposits that had clearly accumulated against the outer wall, either from an outside influence or indeed from the process of casting out of materials from the precinct's first floor. Since excavations from season 2009-10 had already focused on the midden near the main tower, excavations was swiftly abandoned. However, the deposits that were apparent bore a striking similarity to those found in Spaces 3000 and 3006 from season 2009-10. These were packed with shell and charcoal and were interpreted as surfaces from within the compound that had been discarded.

Spaces 3022 and 3023 were small exterior areas lying directly outside the outer western compound wall. These spaces were merely planned and not excavated. Two patches of charcoal and ash were noted in Space 3023 indicating that large fires had occurred.


Figure 2.53: Ceiling fragments bearing indentations of reed and plant material from Space 3011

### 2.3.4 Phase 1: Dilapidation

The final phase pertained to the dilapidation and collapse of the precinct building. Those layers interpreted as direct interfaces with the surviving occupation deposits were usually of mid grey sandy silt containing small fragments of plaster and pieces of beachstone from damaged walls. These deposits differed considerably from the layers of fallen rubble stratigraphically above, since they contained less massive stone and plasterwork. They were more compact and were interpreted as material that had naturally filtered down through the larger material over the last two to three hundred years.

In some spaces, the presence of small organic deposits bearing the indentations of reeds and other vegetation suggested the collapse of ceiling material (Figure 2.53). Spaces 3011, 3016 and 3018 all contained evidence of fallen organic ceiling material.

Collapsed arches and ceiling vaulting were also found in demolition deposits. The excavation of Space 3009 displayed the remains of a large rectangular pillar which had collapsed and fallen onto the plaster floor. Its presence strengthens the idea that Space 3009 was an important space within the western wing.

The remnants of two very large arches were revealed in Spaces 3010 and 3011. A collapsed arch was positioned fairly close to the entrance of Space 3010 and its massive curving structure may indicate the remnants of ceiling vaulting. Its huge size and position near the entrance of the main courtyard was reminiscent of the other archway found at the entrance of Space 3004 in season 2009-10. This served as more evidence to suggest that there was a permanently open entranceway to Space 3010.

Other collapsed doorway features were found at the entrance between Space 3010 and 3011. The entranceway to the courtyard had two arches: one was revealed to have fallen immediately above the threshold of the entrance. The other fallen architectural piece residing within Space 3016 was a fallen lintel comprised of moulded plaster. This lay in the area where Space 3016 joined the central courtyard. The presence of these fallen arches marking the transition between interior and exterior spaces indicate demonstrate the differences in decoration between these zones.

The dilapidation of the fortified compound seen across in the excavation area did not occur at one specific point in time. Instead, the collapse occurred gradually over a period of some decades. Deposits within the main courtyard, Spaces 3002, 3012 and 3020 all displayed the accumulation of windblown sand that was deposited naturally and intermixed with general architectural detritus. It appears that the building, or at least this part of the fortified compound, was abandoned and left to decay naturally.

### 2.3.5 Conclusions

The excavations in ZUEP04 achieved their main objectives and revealed some fantastic archaeology, uncovering fourteen new interior and three new exterior spaces to complement the six already uncovered in the 2009-10 season. The excavations in this part of the fortified compound showed that it was orientated towards providing a more independent domestic facility rather than a purely fortified, military structure. The complex was likely a high-status domestic residence, enclosed within a large precinct wall separated from the remainder of Al Zubarah's population.

The interior spaces were divided into two elements. The first are decorated, well-maintained rooms, which were residences, reception/dining rooms and *hammams.* The second were more utilitarian rooms, including kitchens, storage rooms, a *madbasa* room and other work areas.

This division is readily apparent in the architecture, where the rooms of both the southern and eastern sides were revealed to be lavishly decorated. Intricate moulded plaster adorned the walls, complemented by plaster niches for lamps or other objects. There were dedicated washing spaces with associated soakaways, entrances were adorned with decorative arches, and the floors were plastered, flat, and separated from the outside with obvious threshold steps. Conversely, the

spaces on the western side and to the north were geared towards fulfilling more functional roles, including cooking and storage. Floor surfaces were blackened by soot, badly covered by shell, gouged by pitting, while the walls remained deliberately unplastered.

The architectural construction of the precinct seems to have begun with the building of the outer walls and then the construction of the interior areas. The inside was divided by an architectural line running north/south, effectively forming the western side and also a base line onto which the northern and southern sides could be built. The eastern side was then completed, which also formed the entranceway. Beachstone was used for construction and exterior walls were made from a far better quality stone than those in the interior, being prominently constructed with beachstone-type AG3. This stone was an amalgamation of bivalves and gastropods embedded in a fine sandy matrix which is easily fragmented given significant force. This stone was used to build interior partitions where harder stone types such as beachstone-type AG1 and BJ3 were used to dress the exterior. Mudbrick or wood may have been used for coursing the higher level architecture which may explain the vast quantities of disintegrating rubble prevalent in Phase 4. The only difference seen in construction material was in the west wall of washroom 3013 and in the decorative arches placed over the entrances to Spaces 3004 and 3010.

Examination of the occupation surfaces within the rooms displayed there may have been at least two phases of occupation or at least two occasions where the residing occupants renewed the surfaces of their living spaces. Spaces 3018 and 3014 both had multiple layers of shell-renewal surfaces. This too was apparent in Space 3007 as well as 3004. They may have coincided with the surface deposits within room 3019. Renovations were also seen in the *hammam* of room 3014 and in the additions of threshold steps in Spaces 3017 and 3018. They may have even been coincidental with renovations made to the tower seen in Space 3000. Regardless of the number of times the spaces were renovated, the evidence suggests that the complex was occupied for a period of time long enough to warrant revitalization.

The excavations also clearly recovered signs of the precinct's decline. There were tantalising glimpses of possible destruction and vandalism shown by the smashed ceramic spread outside of Space 3017 and by the burnt timber and collapsed ceiling material in Space 3011. Indeed the pitting of relatively late surfaces in the western wing displayed a possible disregard to the areas general upkeep and appearance. However, this evidence could just be representative of unlinked separate events. There is not a massive phase of deliberate destruction seen in the archaeology; rather, a deterioration, abandonment and then dilapidation.

Future work in this area will undoubtedly need to focus on the main courtyard area 3012 and the two side-courtyard Spaces 3002 and 3020. Excavation in these three spaces revealed underlying archaeological stratigraphy that will hopefully not only reveal the extent of buried architecture and features but also the function of those already uncovered. Tantalising evidence was also revealed at the northern extent of the site, where remnants of a possible entrance in the main western compound wall were discovered. It would be exciting to gauge the extent of the passageways that were believed to run parallel to the north and east walls and gain an understanding of how these and Precinct-Section 8 related physically to the other divisions of the compound. Whatever the scope for future work, the continued excavations at ZUEP04 will undoubtedly yield more engaging, monumental and exciting archaeology.

## 2.4 Zubarah Excavation Point 5 (ZUEP05)

*Pernille Bangsgaard*

### 2.4.1 Introduction

This report describes the results of the archaeological fieldwork carried out at ZUEP05 during the season from November to the end of December 2010. ZUEP05 is a new excavation area and is located immediately next to the main city wall of Zubarah (Phase 5), in the section between Outer Wall towers 9 and 10 (Figures 1.1 p. 5, 2.54).

The excavation investigated part of a large midden at Al Zubarah thought to belong to the main occupation Phase 5. The aim was to expand our knowledge of the everyday-use objects of Al Zubarah as the houses currently under excavation inside the settlement largely provide materials derived from secondary contexts. The houses generally appear to have been cleaned regularly, and at the time of abandonment, so few of these everyday objects have been found there. Evidence recovered from ZUEP05 adds to material excavated from another midden at ZUEP04 during the 2009-2010 season.

### 2.4.2 Background

The specific choice of midden was based on the aim of finding Phase 5 remains. This Phase is the time where Al Zubarah reached its maximum extent, and included the construction of the main outer town wall. It was therefore assumed that a location outside this city wall would ensure targeting deposits dating from the correct time frame. Middens belonging to one of the later occupation phases, where the extent of the city was significantly smaller, appear to be located closer to the occupation itself and thus lay within the area of the main town wall and not immediately outside of it. A final dating of the midden will, however, only be ascertained once datable finds from the midden have been analysed.

To sample the midden, a 12m x 2m trench was excavated into the mound. The trench extends in the west into the city proper, crosses the town wall (5005) and extends well into the centre of the midden. Because the town wall is included in the area, 2 metres to the west was not excavated as this would require the removal of the wall, thus leaving an actual area of excavation of approximately 2m x10m.

The midden as a whole is roughly oval in shape with an approximate diameter of 20 metres east-west and approximately 35 metres north-south. The central part of the midden rises approximately 2 metres above the surrounding landscape. The midden is also distinct from the surrounding yellow sand by its more brownish colour, and the ceramics and bone fragments visible on the surface. Part of the mound appears significantly compressed, probably due to the cars driving across the midden in an approximately north-south direction next to and parallel with the town wall. These tracks also cross the excavation area and the effect of such compression is clear. The deposits layers are here hard to distinguish from each other and the amount of finds in this area is significantly lower to what was found further to the east in the central area of the midden.

### 2.4.3 Excavation and stratigraphy

The midden is characterised by a fairly straightforward stratigraphy (Figures 2.55 to 2.57), but it includes multiple thin layers of deposits typically one to five cm thick. Some of these have a limited extent or simply merge with adjoining layers. A single deposit layer does not always extend across the entire east-west extent of the excavation area and it was therefore necessary to excavate these deposits in groups, as it proved difficult, and too time-consuming, to excavate each layer individually.

Figure 2.54: Aerial photograph of ZUEP05 at the beginning of excavation

From the extent and morphology of these thin deposits it may be suggested that each represent a separate layer of detritus, possibly from a single event of dumping or from a very limited time period. If this is in fact the case then each locus in the main midden levels (two to four) represent a very limited time span that most likely cannot be separated chronologically, by the finds and ceramics analysis.

During excavation all removed soil was sieved in 3 mm sieves. It was possible to divide the 20 loci of ZUEP05 into six stratigraphic levels of use, described below.

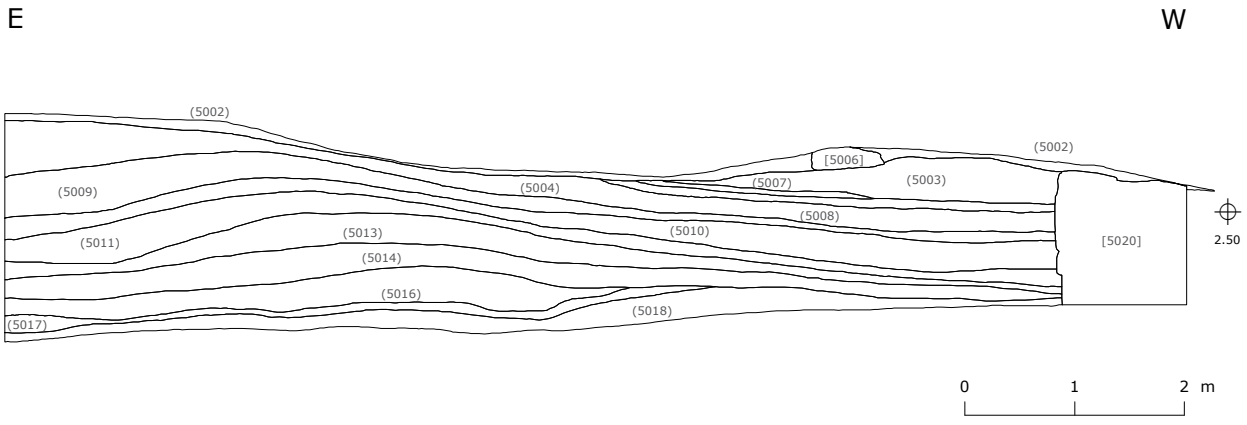



Figure 2.55: Northern profile of the midden trench

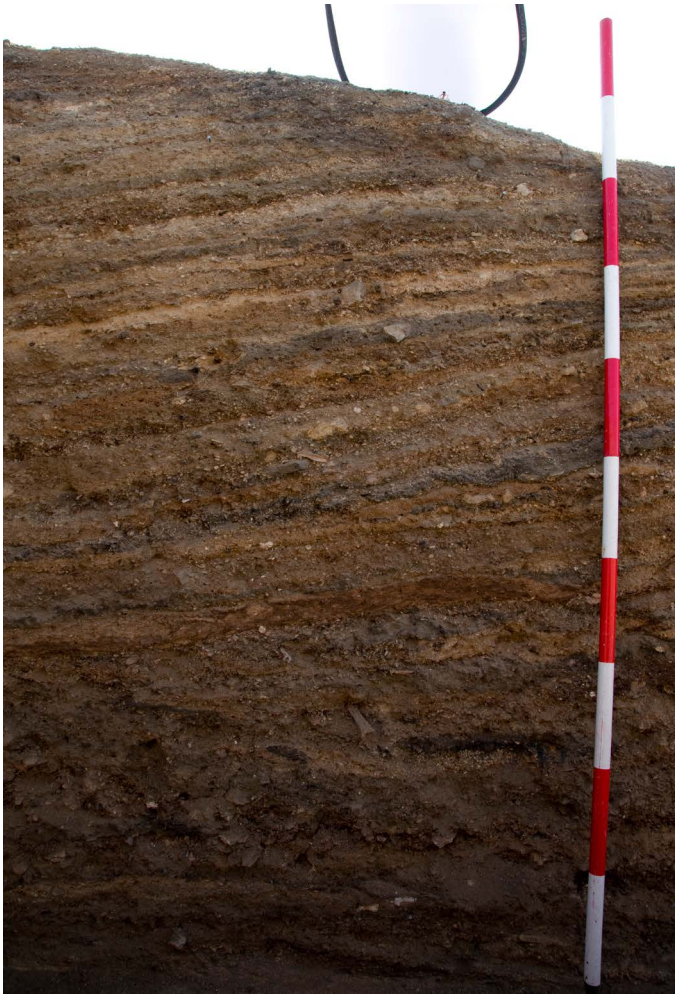


Figure 2.56: Excavated northern profile through the midden

Figure 2.57: ZUEP05 - end of excavation

### 2.4.4 Level 6 (Loci 5019, 5005)

Layer 5019 is unexcavated at this time and as such represents the bottom of the ZUEP05 excavation area. The locus is visible as a hard and compacted surface to the east of the city wall. It butts against the wall and gradual slopes away to the west. The excavators could observe no finds or objects on the surface apart from charcoal flakes and weathered limestone fragments. This combination could suggest that we are dealing with the original surface of the area and as such the possibly top of an underlying natural deposits where the charcoal and limestone may represent remains from the construction of the city wall.

Figure 2.58: The city wall (east), with the later blocking visible

### 2.4.5 Blocking of the city wall (5020)

Two metres of the east side of the main city-wall were exposed. This small stretch of wall includes a later blocking made of random courses of beach stones held together by a gritty plaster (Figure 2.58). The blocking is located at the southern end of the excavation area and extends beyond the limit of excavation. It is likely that this later alteration to the city wall blocks an earlier passageway into the city. It is, however, not clear whether the opening represents a larger "proper" town gate or a small, and perhaps less permanent, access point. The location of this opening right in front of a large midden, which was deposited both before and after the blockade does perhaps indicate that a limited amount of traffic would have passed here. Only further excavation to the south of the present ZUEP05 excavation area can establish this with any certainty. The blocking event of a possible entrance into the city represents a convenient division of the midden refuse layers into Phases 4 and 5, but the general appearance of the layer do not deviate significantly from each other.

Based on the evidence outlined above, this phase of the midden deposits belongs to the main occupation of Zubarah, Phase 5, although probably the later part of this.

### 2.4.6 Level 5 (Loci 5011, 5013-5018)

The earlier of the two main use phases of the ZUEP05 area as a midden was labelled Level 5. The upper layers do not deviate significantly from those of the later Level 4, neither is there any sterile sand layer separating the two phases. Level 5 consists of thin layers of deposit in varying colour, generally extending across the entire area of the trench, although it can be difficult to follow each individual layer. The lower half of Level 5 is significantly more variable in range and general appearance. The north facing section suggests that there were initially three small mounds of refuse, which later deposition events then connected, filling out the entire area. The two final loci excavated this season (5017-5018) are only exposed in half of the original excavation area, as a 1m x 10m area was excavated further along the southern end of the trench. This tactic was chosen as a precaution due to the depth of the trench at this point, particularly in the eastern end.

Based on the evidence this phase of midden deposits probably belongs to the main occupation of Zubarah, Phase 5, as it is clearly later than the construction of the city wall, but also earlier than the blockade of the wall's access point (5020). The analysis of the finds will, however, have to corroborate this before a final conclusion can be made.

Figure 2.59: The interface between Loci (5004) and (5009)

Figure 2.60: The interface between Loci (5009) and (5010)

### 2.4.7 Level 4 (Loci 5004, 5009-10)

This is the first of two main use levels of the ZUEP05 area as a midden (Figures 2.59, 2.60). In Level 4 the refuse layers extend across the entire excavation area from the city wall in east and into the centre of the midden. Judging by the number of layers and amount of deposits excavated here. the level also spans a longer time period than Level 3. There is no indication of any prolonged break of refuse disposal inside this level, which could potentially have been identified by thick layers of sterile sand.

The deposit layers vary in colour from a brownish-yellow to dark grey and black but generally consist of fine sand. All the midden loci have some inclusions and these include varying amounts

of white cone-shaped mollusc shells used for pavement inside the courtyards of the houses. The exact amount of inclusions appears to vary between individual loci, but this variation is significantly more pronounced in each locus due to the concentration of finds and objects in the eastern end of the excavation area.

The top layer (5004) is located immediately below the top-soil in the eastern half of the trench, and there is therefore some later contamination, evidenced by the occasional find of plastic. The remainder of this phase appears without any obvious traces of contamination. Included in Level 4 is an unmistakable floor surface located immediately next to the city-wall on the outer eastern side. The surface is clearly detectable for approximately 1 metre and then fades away into the surrounding softer midden layers.

This level of midden deposit likely belongs to the end of the main occupation of Al Zubarah (Phase 5).

### 2.4.8 Level 3 (Loci 5007-8)

Level 3 represents the latest use of the ZUEP05 area as a midden. The refuse layers are confined to the western half of the excavation, immediately east of the main city wall (5020) and they extend approximately four metres to the east, thus filling the area between the city-wall and the earlier midden deposits. The upper half must be assumed to include some later material as both loci contain the occasional find of plastic. Included among these refuse layers is also a hardened surface located at the top of (5008), likely the result of trampling or repeated use as a walkway.

Figure 2.61: (5003) showing ceramics scatter

### 2.4.9 Level 2 (Locus 5003)

Level 2 is located in the western half of the excavation area. To the west it is defined by the outside of the town wall and is visible approximately 3 metres further to the east. There are rare finds of ceramics (Figure 2.61) and bones in this locus, but also several fragments of worn plastic, suggesting that the layer is either contaminated or of a fairly modern date. The soil excavated here consists of multiple layers, which are different in character including colour, compactness, grain size and composition.

Locus (5003) does not represent a typical midden deposit. Instead this level includes multiple episodes of use. The brown layers of use include many flecks of charcoal and do in two cases include a hardened walking surface of a slightly lighter colour. These layers are separated by thin intervening yellow sand layers and also a few mixed refuse layers. In the lowest sub-levels of (5003) and in the actual transition from (5003) to (5008), a large concentration of at least three ceramic vessels was found. These vessels appear to have been broken here and sherds were found across an area of about 1.5m x 1m.

Figure 2.62: Wall 5006 seen from the side

### 2.4.10 Level 1 – (Loci 5002, 5006)

Level 1 is the very latest use level of the area, and apart from the topsoil from across the excavation it consists of the modern rubble-wall (5006) located in the west end of the area (Figure 2.62). The wall cuts across the excavation area from the north at a slight angle (north-northwest to south-southeast) and extends for about 2.5 metres. It is visible on the surface outside the excavation area and it continues further to the north for approximately 2.2 metres. The wall is flimsy and poorly constructed with only two layers of uncut stone of varied size, lain haphazardly on top of each other without any traces of mortar. The wall is clearly datable as a recent construction based on the discovery of half a Styrofoam cup and a piece of plastic sheet found underneath the wall and between the two layers of stone respectively. Based on the Styrofoam cup this phase can be included in the latest sporadic use of the area, Phase 1. The reasoning for dating the wall to this phase (post 1950s) is based on the Styrofoam as this material was only invented in 1954 by Ray McIntire for Dow Chemicals.

### 2.4.11 Bulk finds and field objects

The amount of finds in the excavation area is as extensive and varied, as had originally been hoped for. This was partly facilitated by sieving all soil in 3 mm sieves, resulting in a very high rate of finds recovery.

Eighty-three field objects have been registered from ZUEP05 and these include 27 coins, which derive from various loci, representing levels 4 to 2. Other field objects include worked bone, various beads, worked wood and several metal objects such as iron nails, and bronze rosette, pendants, buckles and rings.

The main bulk finds are the ceramics and the animal bones both of which represents substantial collections. The faunal remains have not been analysed to date, but the preliminary results from the ceramics analysis indicate that the midden collection includes a very wide and varied assemblage, thus covering a wide range of activities.

Aside from the extremely rich finds of ceramics, bones and other objects the midden also produced substantial amount of easily perishable organic material such as botanical remains, human and animal hair, wood, rope and various fragments of textile. Apart from the macro finds, the excavated soil also included high amounts of organic material particularly in the eastern end of the trench, the central part of the midden. Soil samples were therefore regularly taken during excavation and these samples represent each of the midden levels from context and all loci from 5004 to 5018.

### 2.4.12 Conclusion and Recommendation

The ZUEP05 excavation represents a substantial addition to our knowledge of Al Zubarah's occupation. The initial analysis indicates that the aim of expanding our knowledge of the everyday use-objects of al Zubarah has been achieved. The majority of the results from this season are still pending, as these are based not on easily accessible architectural remains, but on the large collections of bulk finds and field objects, most of which require further analysis. These analyses should also be able to establish whether the dating of the midden deposit to Phase 5 is correct, but is already suggested by the stratigraphic relationship between midden and wall. Based on the promising results achieved this season at ZUEP05 it is recommended that further excavation should be carried out at an additional two or three middens at Al Zubarah. At the present only ZUEP05 and a medium size midden deposit next to the palatial compound in ZUEP04 have been excavated. The additional results could greatly enhance our knowledge of the refuse pattern of the town of Al Zubarah and would also facilitate an analysis of the variation in access to resources across the town and potentially also across the main phases of use.

## 2.5 Zubarah Excavation Point 6 (ZUEP06)

*Kirk Roberts*

A sondage (ZUEP06) measuring 5.2 x 5.2m was excavated through the stratigraphic sequence located on higher ground approximately 60m to the north of ZUEP01 (Figure 2.63). This demonstrated that the topography of the underlying geology, rather than longer occupation sequence, was the reason for a higher ground level in this part of the site. The earliest feature excavated was a stone-lined hearth sealed under a layer of windblown sand (Figure 2.64). Above the windblown sand were the remains of a probable metal-working area. This included a number of surfaces and post-holes with frequent remains of metalworking in the deposits. As this phase of the use of the area was destroyed by fire, it is a possibility that this occupation relates to the Phase 5 occupation of the city. The architecture was re-built and a sequence of surfaces (Figure 2.65), rubbish pits and occupation layers reflect the built-up of deposits through the use of the area in this phase. Again there was substantial evidence for an industrial use of the area and the surfaces may relate to the beach-stone walls visible on the ground surface in close proximity to the trench. It is therefore possible that this phase of use may date to Phase 3 of the settlement although further work would be needed to test this assumption. The evidence from ZUEP06 fits with the evidence from ZUEP01 of an area to the north of the wealthy courtyard houses (Compound 1 and Compound 2) which is a zone of industrial activity and temporary occupation, located in an area close to the souq to the west.

Figure 2.63: Post-excavation photo of ZUEP06

Figure 2.64: Hearth [7051] underlying clean windblown sand. As hearth was so close to the section it was excavated in reversve stratigraphic order

Figure 2.65: Surface (1915) truncated by pits

# 3. Excavations at Freiha

*Gareth Rees*

## 3.1 Introduction

Four excavation points were investigated at the settlement of Freiha during the 2010-2011 season. The locations of these excavation areas were based on a total station survey and terrain modelling of the settlement, as well as trial excavations, carried out in the previous season of fieldwork (Figure 3.1). Excavations continued in FREP01 with the aim of understanding the methods of construction and phases of use of the beach front mosque. There was no further excavation in FREP02 or FREP03 this season, the deposits in these parts of the settlement having already been characterised. Instead, three new excavation areas were opened. FREP04 was located in an area highlighted by the survey as containing relatively well preserved structures surviving to a height of 0.5m or more. It was postulated that this area may have been the last to be occupied and so excavations aimed to characterise the architecture of the later buildings as well as investigate the possibility of early phases of structures below, providing a continuous stratigraphic sequence. An additional aim of this season was to investigate the 'linear midden' feature which appears to separate the zone of well preserved buildings to the south from those to the north and east; FREP05 was located in this area in order to evaluate the character and date of these deposits. Based on finds recovered from the walk-over survey and excavations in FREP03 in January 2010, both recovering pottery of a relatively early date, FREP06 was opened over a large deflated midden to the east. This aimed to recover datable material and artefacts that would provide information about the character and period of use of this, less well preserved, part of the settlement.

## 3.2 Freiha excavation point 1 (FREP01)

### 3.2.1 Introduction

Excavations continued in FREP01 this season, the upper deposits having been removed previously. The excavations encompassed an area 30m$^2$ centred on a structure with several phases of stone walls aligned west-southwest – east-northeast (SW corner 182425 473280 QNG). Limited excavations were carried out outside of the building in order to investigate building techniques and to verify the existence of any external features. The previous season of fieldwork had uncovered three rows of column bases to the west and a courtyard that measured 18m (NNE\SSW) by 13m (WSW\ENE). The orientation and architectural layout of this building strongly suggested that it was a mosque, and excavations during the current phase of work have shown this to be correct. Only a small number of the architectural features were removed to preserve as much of the building structure as possible. Therefore, the earliest phases (5 and 4) were uncovered in sondages and not fully revealed in plan. However, it was evident that Phase 5 walls and surfaces directly overlay natural deposits. In the later phases the mosque was separated architecturally into three areas: the courtyard, the open iwan, and a prayer hall (Figure 3.2). The prayer hall was divided into two, presumably covered, iwans in Phase 5 which for clarity are referred to in the text as the eastern and western prayer hall; the western prayer hall being the iwan of the qibla.

### 3.2.2 Phase 5

The first phase of construction (walls 302, 522, 764, 727, 717) formed a building measuring 22m WSW – ENE and 17m NNW–SSE with a central mihrab in the qibla wall to the west-southwest (Figure 3.3). A mortar surface was laid in the courtyard whilst a fine plaster surface was laid in the prayer hall. Evidence of plaster in the mihrab and on the base of the exterior of the western and southern walls indicates that the building may have been plastered inside and out at this time.

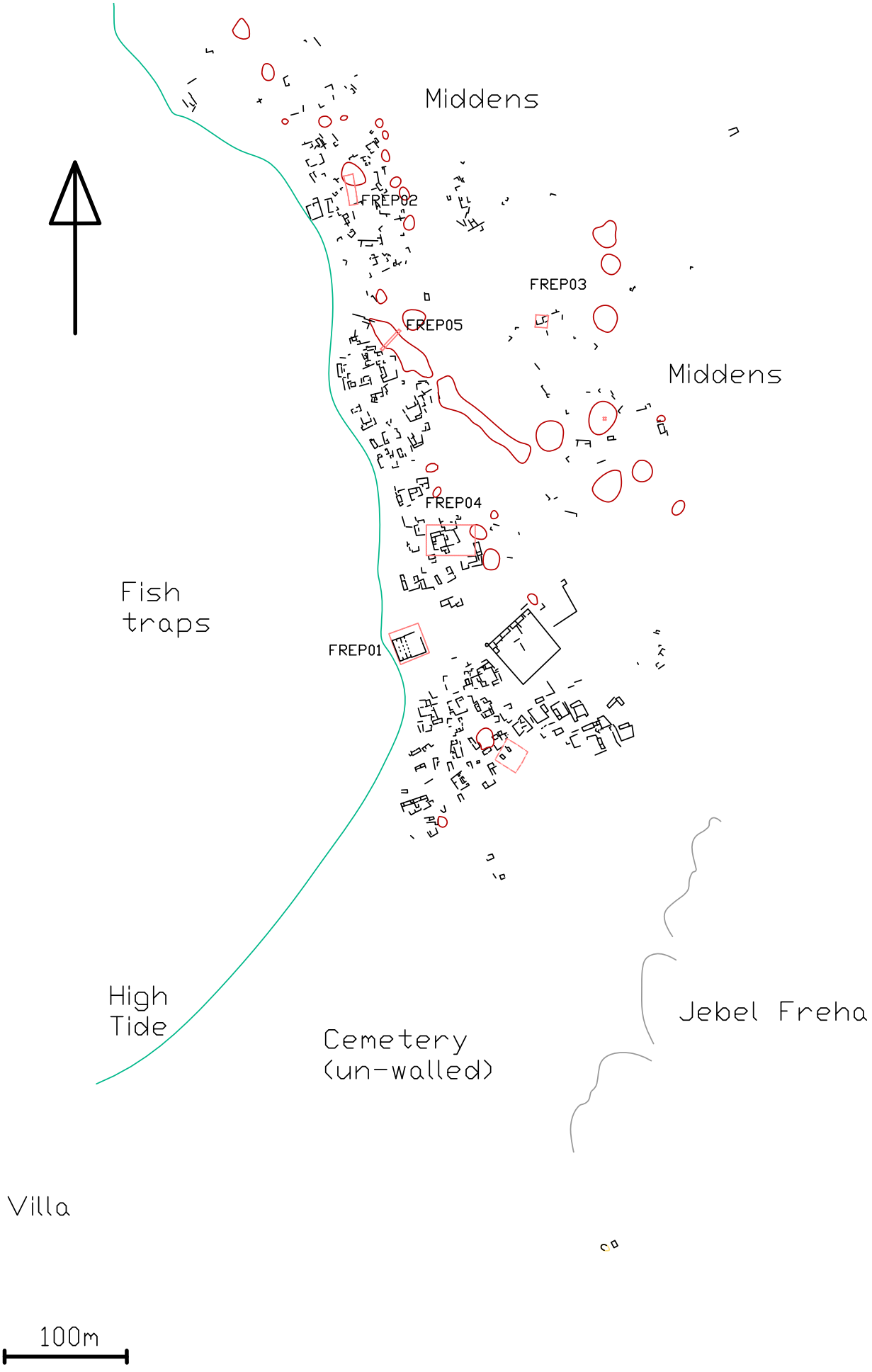



Figure 3.1: Plan of surveyed features at Freiha showing excavated areas

Figure 3.2: FREP01 - aerial view

It was not possible to differentiate any internal dividing walls in this phase. A well was dug in the south east corner of the courtyard.

The mosque then appears to have been abandoned for a long period of time, in which the northern wall (522) collapsed and was robbed out, before 0.3m of silt accumulated over its foundation. This abandonment of the mosque does not appear to have been associated with a complete abandonment of the settlement since a large pit was dug during this period.

Figure 3.3: Phase 5 *mihrab* filled by accumulation of silt overlain by mud-rubble (bottom), overlain by Phase 3 *qibla* wall

### 3.2.3 Phase 4

The northern wall was rebuilt (751 and 753), 2.25m to the north of the previous wall and on the same alignment forming a structure that measured 22m west-southwest - east-northeast x 18.6m NNW - SSE. No evidence for a divide between the prayer hall and the courtyard was uncovered in this phase. Two resurfacing episodes occurred in the western half of the building and externally to the north and south.

Another period of abandonment then occurred with surfaces in the Prayer hall and the courtyard covered by windblown sand and rubble and a thick rubble deposit accumulating in the centre of the building (later the open iwan). The Phase 4 northern wall may have collapsed once again at the end of this phase.

### 3.2.4 Phase 3

The entire extent of the prayer hall wall (712, 728=41, 48) and the northern courtyard wall (227) were rebuilt during this phase, each of these walls being founded on or over the remains of an earlier wall. Two surfaces were documented in the courtyard: the first appears to be the result of trampling, represented by a compacted sand surface; the second, later, surface was a hard mortar floor. The eastern prayer hall walls from this phase were built in foundation trenches dug into the rubble layer. The mosque may have been realigned at this time, with walls <227> and <712>

built on an orientation 5 degrees to the north of the Phase 1 and 2 walls (522, 764, 751, 753) and a new mihrab was constructed in the centre of the new qibla wall. The dimensions of the building remained relativity unchanged but three internal walls divided the space. Wall <797> separated thecCourtyard from the prayer hall and ran, at ground level, between walls 48 and 49 forming a 12m wide courtyard. Walls 48, 49 and 797 may have formed a colonnaded open iwan, 2.60m wide, but no evidence of columns bonded into these walls survived. A compacted shell and grit mortar surface was constructed in the eastern prayer hall before a levelling layer was deposited for the construction of a new plaster surface. Another plaster surface was also laid in the open iwan.

The open iwan was divided from the main prayer hall by walls 757 and 767. These walls, built in a foundation trench dug into rubble (293), formed a wall across the entire width of the prayer hall with a door in the centre aligned with the qibla wall. To the north of the door in wall 757 a separate, internal, mihrab and minbar were constructed as part of this divide. The prayer hall was then divided again, into an eastern and western iwan. This divide was most likely spanned by arches with the central arch aligned on the axis of the rear mihrab. Postholes and stakeholes dug into the prayer hall surfaces may have held posts that were part of scaffolding for maintenance and alteration of the roof, lintels and columns.

The building then fell out of use for a third time with laminated windblown silts and mud-rubble deposits building up in the courtyard, in the prayer hall and outside the building. There was little evidence of roof collapse in the build up of these layers, but the central columns on bases 791 and 792 may have fallen completely, whilst 793 may have been badly eroded before the next period of use.

### 3.2.5 Phase 2

The external walls do not appear to have collapsed during the period of abandonment with only internal column bases being replaced. Column bases 56, 57, 58 and 59 were constructed on the courtyard-iwan dividing wall whilst the rear prayer hall column bases were replaced with smaller column bases. Some column bases were completely reconstructed, built in foundation pits dug through the remains of the preceding bases. This new location allowed a complete view of the mihrab and the newly built minbar. Remains of an arch, which would have spanned the qibla area at a height of c.1.96m above the surface, were also found (Figure 3.4).

Plaster surfaces were laid in the prayer hall and the open iwan and a thick beach shell surface was laid in the courtyard. Mortar surfaces were built to the north and south outside of the building. Postholes were dug in all areas of the mosque after the main period of use which may have been provided supports for temporary scaffolds and roof. It is also possible that these posts reflect the use of the abandoned mosque for temporary shelters (e.g. tents), for a short period of time.

There followed a period of major structural collapse with roofing material spread over the prayer hall. Silt and rubble accumulated in all parts of the building and over the external surfaces. The courtyard may have collapsed completely with rubble overlying it in places. The northern prayer hall and the northern segment of the qibla wall may have collapsed along with dividing wall 757\767.

### 3.2.6 Phase 1

Reconstruction in this phase reused a large amount of rubble, presumably from the previous phase of collapse. The northern prayer hall wall (42=49) and qibla wall 43 were built first, with two windows being added in to the north of the open iwan. The northern pier of the rear prayer hall divide was also built at this time. The eastern prayer hall wall was reconstructed with wall 757\767 (internal mihrab and minbar) being replaced by a more open arrangement of square windows, and flat lintels. Wall 47 was bonded into the northern prayer hall wall whilst 46 had been built in a ‘plug’ knocked through wall 728. This ‘plug’ was then covered externally by a red-

brown silt and cobble facing. Based on the rubble recovered from the upper layers, the mosque at this time may have consisted of arched colonnades at the front and rear with a colonnade with flat lintels between the open iwan and the prayer hall. The prayer hall was then resurfaced with a thick concreted plaster, which may have continued into the iwan. The resurfacing was closely associated with the plastering of all of the internal walls of the structure.

The courtyard wall (38, 39, 40) was constructed in a shallow mortar-filled foundation trench. An entrance was located in the centre of the wall, directly in line with the rear mihrab. Thick mortar surfaces were laid in the courtyard and externally on all sides of the mosque.

Figure 3.4: Archway (161) collapsed over mihrab associated with column bases 51 ad 52

### 3.2.7 Discussion

The mosque in Freiha appears to have been used over an extended period of time with several episodes of abandonment leading to the collapse of the roof and many of the walls and columns. This regular abandonment of the building may indicate that the settlement was of reduced size or depopulated on several occasions. If there was a minaret, it is most likely to have been located to the north-east of the courtyard. The sections of a modern (post-1977) cut feature in this area show that the walls of the building in all phases were deeper in this area, indicating that they may have been supporting the weight of a tall structure. The rubble from the minaret may have been removed and used for building material elsewhere.

The northern walls of the building collapsed more than those to the south and this may be due to the prevailing north-westerly wind eroding mud-brick and plaster faster on the northern side of the structure. The mosque was extended by 2.25m to the north in Phase 4; this event may relate to an increase in the settlement's population. A major reconstruction event occurred in Phase 3, when the entire prayer hall and northern courtyard wall were rebuilt on a different alignment from that of the previous phases, with a new mihrab being added. It is assumed that the previous southern and eastern courtyard walls were still in use at this time. The mosque in this phase was 18.6m wide and 22m in length and consisted of a courtyard, an open (probably colonnaded) iwan, and a covered prayer hall divided

into two iwans each 2.60m wide by a row of four columns. The divide between the open iwan and the covered prayer hall was formed by a wall, including a mihrab and minbar. Access to the prayer hall was through an opening in this wall aligned with the rear mihrab. Adjustments to the alignment may have been made following improved measurements of the correct direction of the qibla wall.

The number of postholes located in and around the prayer hall may represent attempts to support the building's roof during periods of disuse. It is not clear how long the disuse episodes lasted but laminations of windblown silt and eroded red-brown construction material (representing differing erosive processes during different seasons) imply that it was probably years rather than months. The people of Freiha appear to have been constantly battling the erosive forces of the wind, and possibly the sea, to keep their mosque standing.

Reconstruction in Phase 2 consisted primarily of columns, which may indicate a shorter period of abandonment with only minor internal collapse. The two rear central columns were completely rebuilt and a minbar was constructed to the north-northwest of the rear mihrab. These two columns may have supported much of the weight of the roof making them more susceptible to collapse during periods of abandonment. The columns in the prayer hall were spanned by arches (in excess of 1.96m high), although it is possible that a mismatching arch still existed to the south where the Phase 3 column and pier had not collapsed. New columns built at the front of the open iwan were also spanned by plastered arches (in excess of 2.10m high).

A piece of carbonised roofing material was recovered from the collapsed mud-rubble accumulated after this phase. This carbonised material is likely to represent the remains of palm matting laid over wooden beams in the roof. This would then have been covered by the mid-red silt construction material which was found in much of the collapse.

The southern and eastern courtyard walls had been covered with silt and rubble prior to the final use of the building. A thick silt build up covered by roof collapse in the prayer hall also attests to the extent of disrepair by this time. In the final phase of use very little new stone appears to have been sourced with much of the walls consisting of rubble blocks. As was the case during the previous extended periods of abandonment, the northern wall had also collapsed along with the prayer hall\iwan dividing wall. No minbar structures were found associated with this phase and those of previous phases were covered over by new plaster surfaces. The construction technique in this period appeared to be less careful than those of previous phases, however plastering of the entire internal space of the prayer hall and the open iwan along with high quality plaster surfaces may be an indication that the wealth of this later population was no less than previously.

## 3.3 Freiha Excavation Point 4 (FREP04)

### 3.3.1 Introduction

Excavations in FREP04, located 65m to the north of the mosque, aimed to investigate the character and date of some of the domestic structures in Freiha. This excavation area targeted buildings identified during the survey in January 2010 in an area, to the south of the linear midden, thought to have had the longest period of occupation. Many of the buildings identified during the survey appear to have consisted of several small rooms surrounding a courtyard measuring about 12m by 12m; the buildings located in FREP04 appeared to be particularly well preserved examples of these typical structures. This trench measured 25m north to south and 40m east to west (SW corner 182255 473370 QNG) and included the remains of four separate stone-built structures along with half of a midden mound c.20m in diameter in the NE corner. Removal of the windblown sand overburden revealed a complex series of rooms with multiple abutting walls. Excavations focused on two buildings in the centre of the area and the midden (Figure 3.5). A minimum of four phases of architecture were uncovered with a final phase of deposits representing midden dumping in the disused rooms.

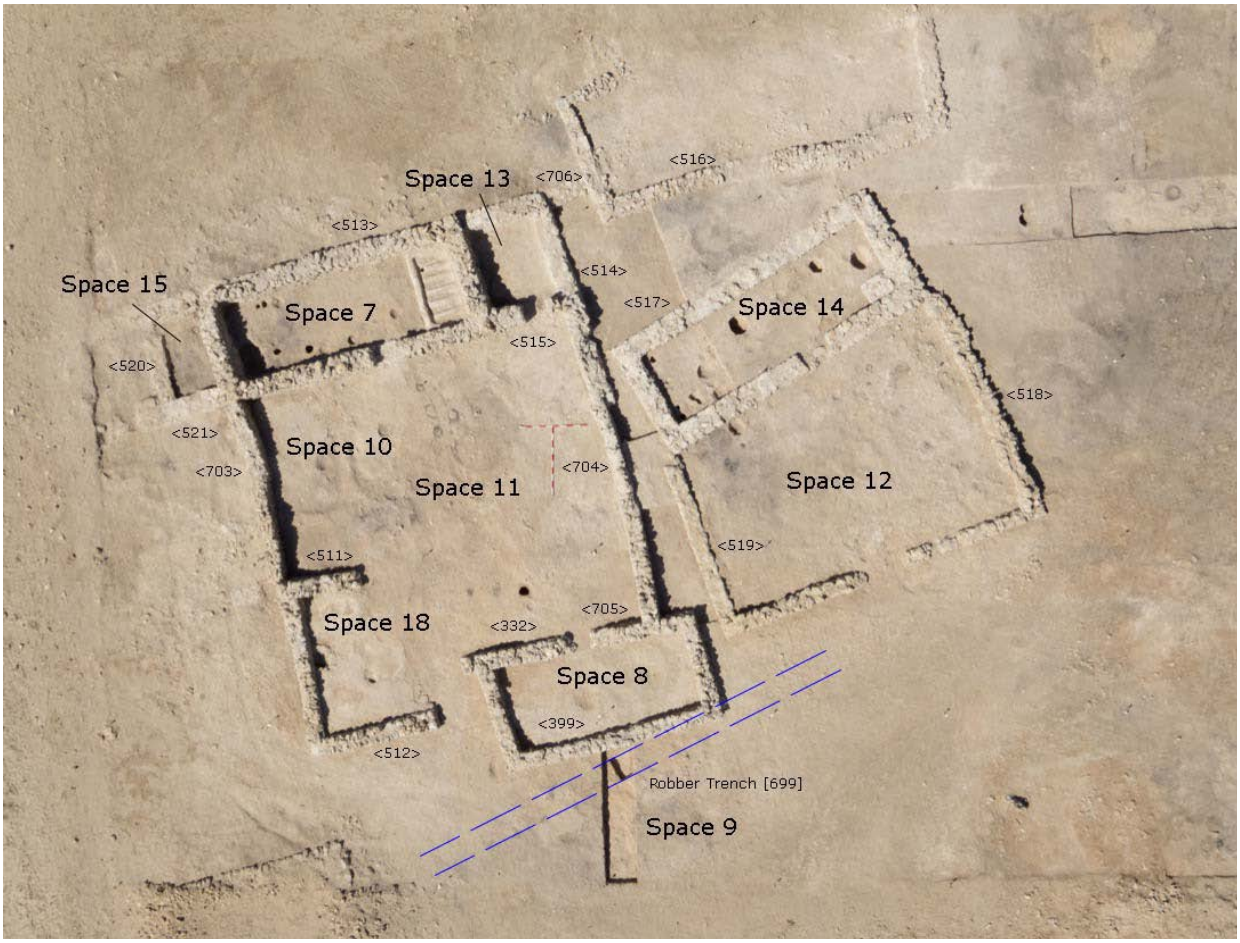



Figure 3.5: FREP04 - aerial view

### 3.3.2 Phase 5

Few features uncovered this season date to this period. Wall 516, surrounding an uninvestigated room, was the earliest wall uncovered but was built on top of midden material indicating that earlier occupation was present below. Several postholes, identified by a sondage in Space 14, pre-date wall 517 and may relate to occupation associated with wall 516.

### 3.3.3 Phase 4

Rectangular rooms Space 7 and Space 14 were constructed on different alignments in this phase. Both were constructed from a single wall and contained plastered features. The madbasa in Space 7 indicates that this room was used as a store room at one point in its history whilst the sump pits located in both rooms suggest that they may have been used as domestic kitchens (Figure 3.6). Quern stones and a large amount of pottery recovered from Space 7 support this idea.

A robber trench [699] identified to the south suggests that this period was a time of great investment in the settlement with large and substantial buildings being constructed. The construction of wall 514 may indicate that more rooms were present in this Phase, which were later dismantled.

### 3.3.4 Phase 3

Several walls survive from this phase that may once have been part of larger, complete rooms. Wall 332, 705, and 511 may have been partially dismantled in a later period, but their fragmentary presence gives an indication of the density of occupation at this time. Space 8 and Space 12 survived intact from this period. Space 8 was formed by a single wall abutting wall 705 and may have been contemporary with the primary use associated with wall 705. Later blocking of the doorway between these two rooms may be an indication that the room formed by 705 was in use

after Space 8 had been abandoned. Space 8 contained a shell-filled sump pit in the south-west corner (similar to Space 7), as well the remains of several storage vessels and bitumen coated pots.

Space 12 was a courtyard built on to the southern side of Space 14 (suggesting that Space 14 was still in use in this phase). A shell surface was laid and a *tannur* dug into it. *Tannur*s were also dug to the west of wall 705 at this time. Surfaces located to the east of Space 14 indicate that occupation continued to the east and that perhaps all of the material from these walls was also robbed out.

Figure 3.6: Madbasa (321) during excavation. Facing south

### 3.3.5 Phase 2

Spaces 9, 10, 13, 15 and 18 were all constructed in this phase. All of these rooms included parts of earlier phases of walls in their boundaries. Space 9 was constructed over robber trench [699], indicating that the building that may have stood here was removed (Figure 3.7). No features were located in Spaces 10 or 15 indicating that they may have been disused store rooms or domestic spaces. The quern stone located in Space 13 may indicate that processing was taking place in this area. Surfaces, a *tannur* and middens in the area south of Space 10 indicate that this area was also used for occupation and that its eastern wall may have been removed.

### 3.3.6 Phase 1

Activity at this time consisted primarily of the dumping of midden material in the abandoned buildings in this area. This suggests that settlement was still present nearby but had moved away from the buildings of FREP04.

### 3.3.7 Discussion

The sequence of occupation uncovered in FREP04 is indicative of recurrent occupations of these buildings characterised by periods of dilapidation and abandonment, as suggested by the lack of maintenance of walls (and probably roofs). Only Spaces 7, 14 and that to the south of Space 10 contained more than one period of use. These spaces appear to have been maintained more so than other buildings; a number of postholes associated with Spaces 7 and 14 may represent attempts to support the roofs during periods of absence. Occupation may have been based around these structures, which may have been used for domestic kitchen tasks and storage, with new

Figure 3.7: The walls of Space 9 (foreground) abutted by those of Space 8 to the north. Facing north-west

rooms replacing those around them during each period of occupation. If this was the case then it would have been easiest to reuse fragments of older walls that were still standing and then use the fallen rubble to construct new walls. Midden deposits between some resurfacing and building phases are indicative of abandonment of this local area but not others around, whilst windblown sand build-up between some wall phases tends to indicate a more widespread depopulation.

A large amount of pottery and animal bone (both fish and mammal) was recovered from all of the spaces indicating that this area broadly speaking served had a domestic function. Fishing is likely to have been one of the main subsistence practices in the settlement and several diving weights were recovered. Several fragmentary and complete quern stones indicate that processing of grains or pulses may have taken place, and it is possible that these goods were imported in to the settlement; a large number of coins recovered, particularly from Space 14, is indicative of a population with trading contacts (this is supported by the findings of excavations in Qal'at Freiha in 2005).

It is not clear whether Freiha was abandoned for long periods, if domestic architecture was deliberately not maintained or if the population had constantly changing needs; but evidence from FREP04 indicates a sporadically thriving population with the means to build and rebuild regularly in the same place.

## 3.4 FREP05

During the survey of Freiha in early 2010, a difference in building preservation was noted, with buildings to the south generally surviving in a more complete state than most buildings to the north of the site, whilst those to the east survived only in the form of deflated pisé or mud brick footings. The buildings to the south were bounded by a bank of midden material, 250m north of the mosque, running northwest to southeast from the coast for 170m. This bank measured up to 20m wide and survived up to 0.8m above the ground surface, and was a likely location for the boundary of the later activity in the settlement. This bank was reused in the 1960s as a boundary and bulldozing along the course of the feature can be seen on aerial photographs from 1971 (QMA archive). No evidence of this boundary survives at present but the effects of bulldozing can be seen to the south-east of the bank, which continues as a track out to the modern road to the east.

Excavation point 5 (FREP05) targeted this midden bank to ascertain the presence or absence of a boundary wall for the settlement and to understand how these deposits accumulated. The excavation area measured 22m in length and 2m wide and was positioned perpendicular to the line of the mound (Figure 3.8). No boundary wall was found, but the remains of three structures were uncovered with associated *tannur*s and refuse pits. These were covered by a thick layer of rubble and midden material when they had fallen out of use. This area may have been on the edge of the later, southern, occupation of the settlement, but the appearance of the boundary-like mound today may have been exacerbated by modern boundary construction in the 1960s.

The architecture uncovered in this trench appears to be closer in character to that uncovered in FREP03 (eastern area) than that in FREP04 (southern area). This may be due to the amount of stone refuse from the foundations that has left only partial evidence for these walls, but it may also be an indication that these buildings were part of an earlier phase of occupation at Freiha from which building material was removed to build new structures to the south.

Figure 3.8: FREP05 - facing south-west

## 3.5 FREP06

A sondage measuring 2m x 2m was excavated in a large, deflated, sub-circular midden mound to the east of the settlement. This mound, located 85m to the south-west of FREP03, measured 26m in diameter, and was associated with an area containing house platforms with robbed out walls. The deposits in this midden, the largest surviving feature of its kind in the settlement, were eroded by wind, suggesting that it was in use for a long period of time, but also that it was also not used for longer than many of the other middens in the settlement. Excavations aimed to ascertain whether this feature was in fact of an early date and if it was associated with the buildings located nearby.

The character of the deposits in FREP06 is indicative of regular phases of refuse deposition. Like many other middens in the settlement, this mound originated from dumping refuse in a disused building, which demonstrates that there are earlier phases of settlement before the midden deposition began. The dark ashy deposits, similar to those found in other midden deposits at the site, tended to be rich in artefacts especially ceramic and animal bone, and suggest domestic refuse dumping during a period of occupation (Figure 3.9). A friable red silt, composed of a material found in some wall bonding material and renders elsewhere at Freiha, found interlaced with these layers may have derived from render, mud walls or material from roof collapse in the surrounding buildings. If this was the case if would suggest that the red silt layers may be the result of cleaning after a period of abandonment, and partial structural collapse. This pattern of occupation is one also illustrated in the architecture of FREP04 and in the multiple abandonment layers uncovered in the mosque.

Figure 3.9: West-facing section of FREP06

## 3.6 Discussion

Several themes relating to the occupation of Freiha have become apparent through the excavations carried out in 2010 and 2011. The most dominant of these is a repeated pattern of abandonment and rebuilding. All of the trenches investigated thus far have demonstrated that the settlement is a complex palimpsest of occupation phases interspersed by periods of abandonment. This is something that can be seen most clearly in the remains of the mosque in FREP01. Here, five periods of construction, several on quite a significant scale, took place throughout the life of the building. Each of these phases of use was followed by a period of abandonment, whereby thick layers of windblown silt would accumulate along with debris from wall and roof collapse. The Phase 3 rebuild appears to represent a considerable investment of resources with the entire prayer hall being rebuilt on a different alignment, whilst Phases 2 and 1 represent significant architectural changes to the layout of the mosque; the returning population clearly had enough resources to rebuild this major structure in the same location each time.

The buildings in FREP04, originally thought to be cellular rooms laid out around a courtyard, in fact appear to have been a series of short lived stone-built room based around and abutting two older rectangular rooms. As in the mosque, it was these older rooms in which postholes were found indicating either an attempt to hold up the roof or the use of that area for temporary shelters or lean-tos, perhaps reusing the walls of abandoned buildings. The older rooms, Space 7 and Space 14, had multiple functions with madbasat, a sump pit, quern stones, kitchen waste in Space 7 and a sump pit, a plastered basin and multiple coins uncovered in Space 14.

Both in the mosque and in FREP04 the location remains constant and buildings are rebuilt, probably with rubble, in the same place, rather than moving elsewhere. It is possible that in both these areas some periods of occupation have gone undetected due to the tendency to build directly on to underlying deposits rather than in foundation trenches. The deposits uncovered in the midden (FREP06) to the east of the settlement also clearly illustrate a regular pattern of use with occupational midden deposits interspersed by structural material, possibly cleaned out from partially collapsed buildings. Structural evidence uncovered in FREP03, FREP05 and FREP06 tend to support a model of dynamic, organic occupation in Freiha with walls, rooms and courtyards added when necessary rather than on a set plan, but they also point towards a gradual migration of the settlement from north to south. This migration is illustrated by the large amount of stone masonry that survives to the south in contrast to the fragmentary walls seen to the east and north, and its final stages may be shown by the dumping of midden waste into the rooms in FREP04. It may be suggested that migration of building materials indicates a shrinking population, with people not returning to their houses, and the collapsed masonry eventually being reused in the core further south.

Inspite of these absences the economy of the settlement appears to have been relatively stable and may have involved import of unprocessed foods. Quern stones found in Spaces 7 and 15 may have been used to process grains or pulses, the provenance of which is not known. However, it is highly unlikely that they came from Freiha itself due to the lack of wells in the area (only one was identified by the survey). Coins were found in Space 14 and Space 17. Fishing weights as well as a large number of fish bones reveal the primary diet of people in the settlement, although this appears to have been supplemented by mammals as well as dates. This food appears to have been cooked in several different ways, with clay lined *tannur*s uncovered in several areas (FREP04, FREP05 and FREP03), hearth-like installations in Space 17 and a large number of small shallow firepits in all areas that may represent only short term use.

The sequence of occupation in FREP04 is only just becoming clear and it appears that older structures lie to the east and south-east that may be associated with a robbed out foundation trench. Further excavations in this area would lead to a better understanding of the foundation of the settlement. The deep, wide foundation trench may indicate that there was an initial phase of architecture that was not as organic as the later buildings. Continued excavation down to this foundation phase may help to understand why the population first left and why the character and location of buildings changed so readily. One reason for a change in behaviour may have been

a change in economy, and further, more extensive excavations in FREP03 and FREP05 (which have already produced ceramics dated to the early 17th century) will not only elucidate on the morphology of the early settlement, but will provide data on diet and economy with which to contrast that which has been retrieved from later buildings in FREP04.

# 4. Regional Survey

## 4.1 Introduction

The QIAH regional survey continued the project's successful program of assessing and recording the archaeological heritage of northern Qatar begun the 2009-2010 season. The work consisted of multiple components:

- geomorphological, geoarchaeological and palaeohydrological survey of northern Qatar with a focus around the area of Fuwairit carried out by Dr Philip Macumber
- mapping/ topographic survey of key Islamic era sites in northern Qatar with a particular focus on Fuwairit
- pedestrian survey along the coastline between Fuwairit and Ras Laffan
- Rescue excavations at Khasuma (Al Ruwais)

The aim of this survey work is to provide a wide ranging characterisation of the Al Zubarah hinterland, which played a pivotal role in the development of the settlement. Although it is generally acknowledged that hinterlands played an important role in the formation of towns and larger urban settlements, the exact economic and social relations between the town and the hinterland require detailed archaeological assessment by studying both the settlement and surrounding historic landscape in concert, rather than each in isolation. The survey accomplishes that by mapping key Islamic sites to understand their size, character and function, by surface collections of artefacts for dating and functional analysis, by conducting pedestrian survey to discover new sites, visiting known sites for record updating, and carrying out - where necessary - rescue excavations at threatened archaeological localities.

Previous work as part of this survey component of the Project has demonstrated that there was a close relationship between the town of Al Zubarah and its immediate and wider hinterland. Data suggests that there may have been a spike in site densities during the 18th century, which appears to be related to the emergence of Al Zubarah as a key regional centre. Many of these sites consist of small forts or fortified compounds that protect artisan wells and are often accompanied by additional buildings and settlements. Whether these sites appeared in the landscape as a reaction to Al Zubarah's emergence (protecting existing water and land-use rights?) or whether they were built by Al Zubarah's inhabitants to strategically take advantage of and protect key locales in the landscape is an as yet unresolved question and a key issue for the ongoing survey work and historical analysis.

The survey also acts as a wider heritage management tool by cross-checking sites listed on the Qatar National Historic Environment Record (QNHER) and evaluating their preservation status. As part of this work the survey naturally records sites belonging to all time periods and phases, not just those dating to the Islamic period.

A key part of the survey work has been the geoarchaeological, palaeoenvironmental and palaeohydrological study of Dr Phillip Macumber, whose studies over the course of the last three years has significantly changed our understanding of the hydrological characteristics and historic settlement patterns of northern Qatar. The link between the scarce water resources of northern Qatar and historic settlement continues to be a key concern, as the availability of consumable fresh water was a key constraint on the distribution of farms, camps, villages and towns.

This multi-faceted, multi-disciplinary approach to the understanding the historic landscape of northern Qatar has already produced, and continues to provide, an in-depth insight into the human-environmental relationships, the interaction between rural areas and urban sites, as well as the social, cultural and economic relations between differently constituted communities in northern Qatar in the Islamic period.

## 4.2 Geomorphology, Hydrology and Occupation across North-Eastern Qatar

*Phillip G. Macumber*

### 4.2.1 Introduction

Central to any holistic archaeological study is the relationship between occupation and the natural environment – why people live where they do. This is especially the case in Qatar where low rainfall coupled with low relief results in the absence of fresh surface water. The only natural water source is from groundwater occurring in the Tertiary marine limestone aquifers, the Umm er-Rhaduma, the Rus, and closer to the coast the Dammam Formation which outcrops across much of Qatar. The deeper part of the aquifer system is brackish to saline, and freshwater in northern Qatar is limited to the upper parts of the aquifer, occurring as a freshwater lens. The freshwater is recharged locally, mostly during storm rainfall events during which run off and silt is concentrated in the many depressions scattered across the landscape. The depressions initially formed in response to solution of gypsum, leading to the development of collapse features in the limestone aquifers. The surface expression of the collapse structures are the rawdha which contain the better soils. With no surface water, the only alternative water source for occupation and settlement was groundwater, obtained from the many wells scattered across the country which are commonly associated with the rawdha. Without the groundwater there could be no settlement, and the history of settlement in Qatar is therefore reflected in the history and distribution of its wells.

In Season 1 (2009), the main emphasis of the hydrology and geomorphology study was placed on the landscape around Al Zubarah, which was strongly influenced by the mid-Holocene high sea level from 7,000 to 4,000 years ago during the Flandrian transgression. The sea transgressed as far inland as the eastern limits of the sabkha near Murayr (Macumber, 2009), depositing sediments at levels reaching 1-3 m above that of the present sea level. Sampling of the inner beach ridge was undertaken to provide a basis for better understanding the evolution of the landscape around Al-Zubarah.

The emphasis during Season 2 (2010) was to gain a broader understanding of the general relationship between occupation and the regional geomorphological/hydrological setting across northern Qatar. Attention was focused on the impact on the landscape by the earlier of the two high sea level phases at Qatar, coinciding with the penultimate interglacial period (Eemian – marine isotope sub stage 5e commencing about 140-130,000) and lasting to perhaps 115,000 years ago. During this period conditions were similar to today but perhaps warmer and certainly wetter. The Eemian finished about 115,000 years ago with rapid cooling.

Season 3 (2011) examines the relationship between landscape and occupation in north eastern Qatar from al-Jumayl to Fuwairit and its hinterland, with an emphasis on:

1. Geomorphology and geology of the Fuwairit-al-Ghariyah coastal area
2. The water supply for Fuwairit and al-Ghariyah and inland areas
3. The association of rawdha-playettes-trees-wells and occupation, exemplified by the ruins near Umm al-Kilab
4. Landscape and water along the NE coast of Qatar between Al Ruwais and al- Ghariyah
5. The inland area of northern Qatar was further investigated.

### 4.2.2 Geomorphology and geology of the Fuwairit - al-Ghariyah coastal area

The ruins of the towns of Fuwairit and al-Ghariyah are located on the north-eastern coast of Qatar about 50 km north of Doha and about 20 km east of Al Zubarah (Figure 4.1). They are two of a number of small coastal towns located across northern Qatar. Al-Ghariyah is located 6.5 km to the north of Fuwairit. Fuwairit lies in a gap between late Pleistocene aeolianite ridges fronting the coast, whereas al-Ghariyah is located between the more northerly of the two ridges and the sea.

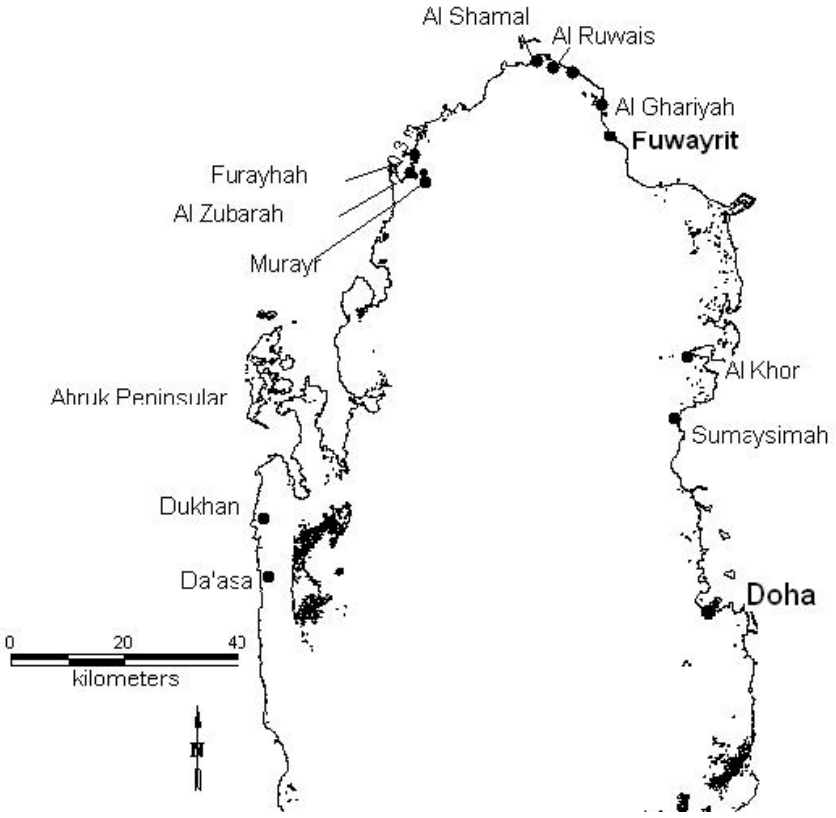



Figure 4.1: Location of Fuwairit, N.E. Qatar

*Geomorphology*

Fuwairit was established on a narrow north-south trending spit-like promontory, attached to the mainland in the north (Figure 4.2). On its coastward side is a further sand spit, forming a barrier to the sea. The two are separated by a narrow tidal inlet, host to mangroves. A second narrow inlet occurs to the west of the town, where it is abuts higher ground formed from a combination of late Pleistocene shallow marine sediments and Eocene Dammam Formation dolomitic limestone (Figure 4.2). The town appears as a very low bumpy ridge of silty sand which partially masks the individual buildings (Figure 4.7), although they are readily distinguished on the satellite imagery (Figure 4.2).

Inland of Fuwairit there is a narrow sabkha developed at the bottom end of a small drainage line commencing on higher ground to the northwest, where it is associated with broad grassy rawdha flats (Figure 4.3, 4.4) The northern end of the town terminates against a small shallow stream channel emanating from the sabkha and separating the town from higher ground to the north, there formed across planated Eemian suite of marine sediments and the overlying aeolianites which form the Jabal Fuwairit. The base of the channel lies close to the water table and it only contains water in small saline pools where the groundwater outcrops. The sabkha is developed on Eemian marine sediments and is actively expanding by under-sapping its sides creating small scarps cut into the limestone and the marine sediments. The edges of the sabkha are commonly moist showing groundwater outflow mostly by capillarity.

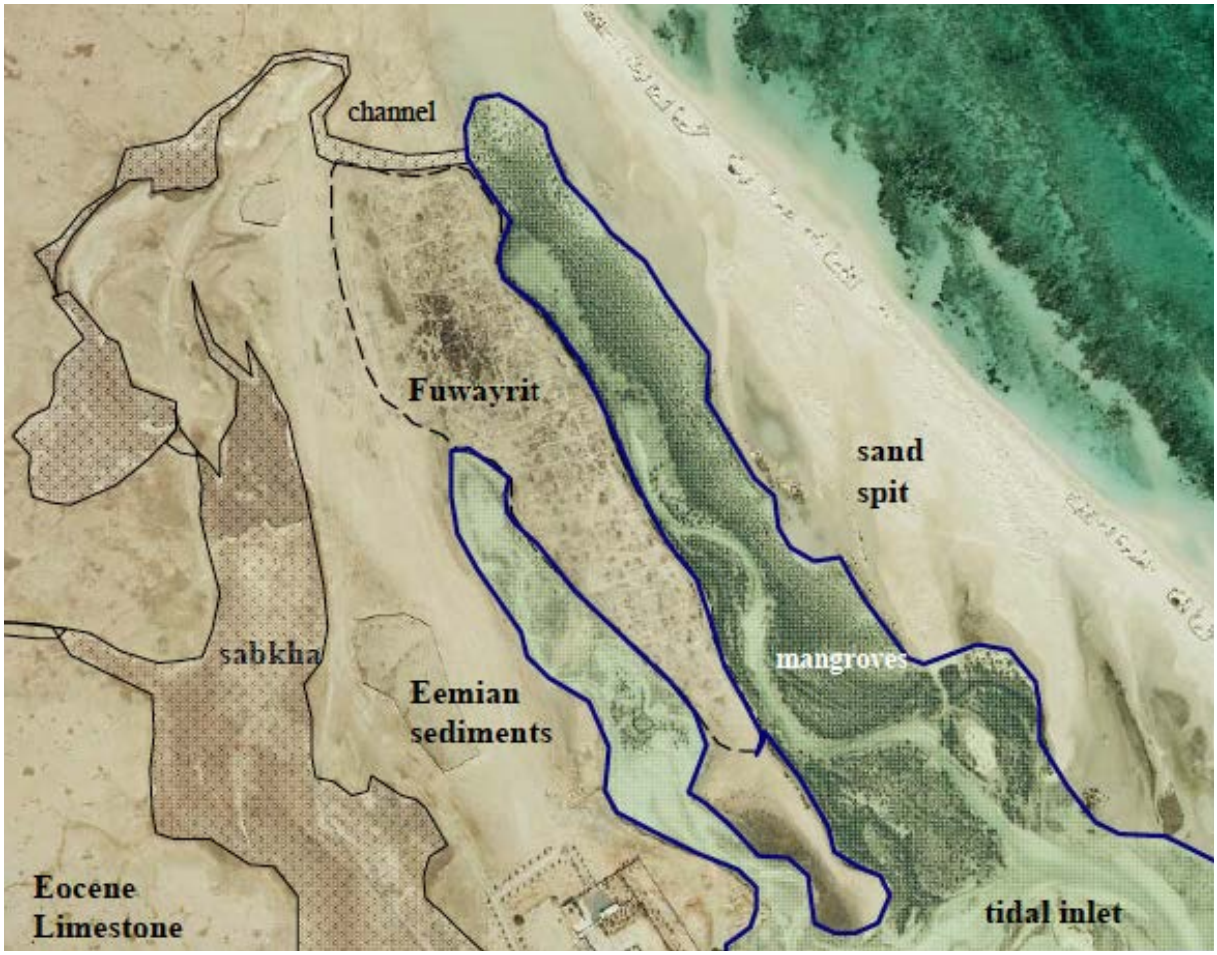



Figure 4.2: Landscape in the immediate vicinity of Fuwairit

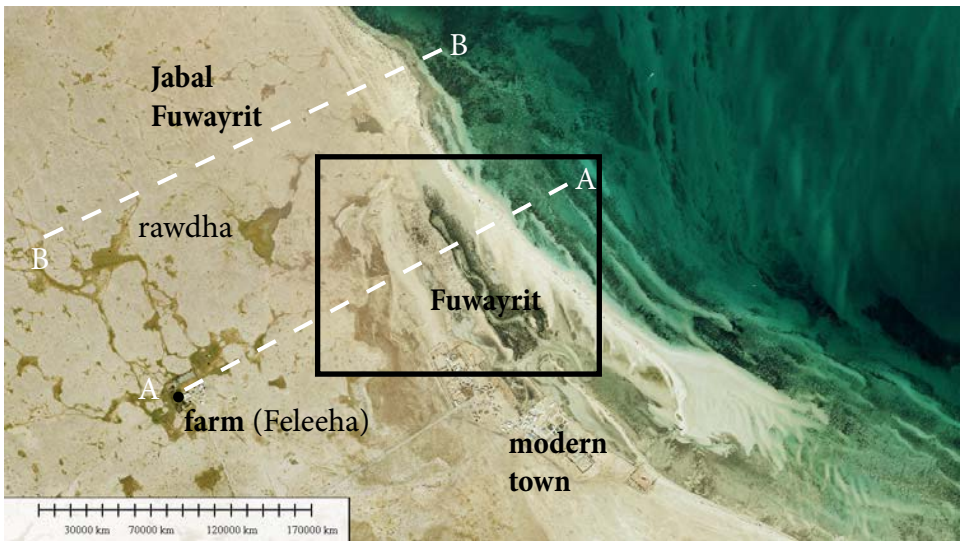



Figure 4.3: Locality map. The larger area around Fuwairit with that covered by Figure 4.2 and shown by the inset. Location of geological section lines 'A-A' and 'B-B' for figures 4.9 and 4.10

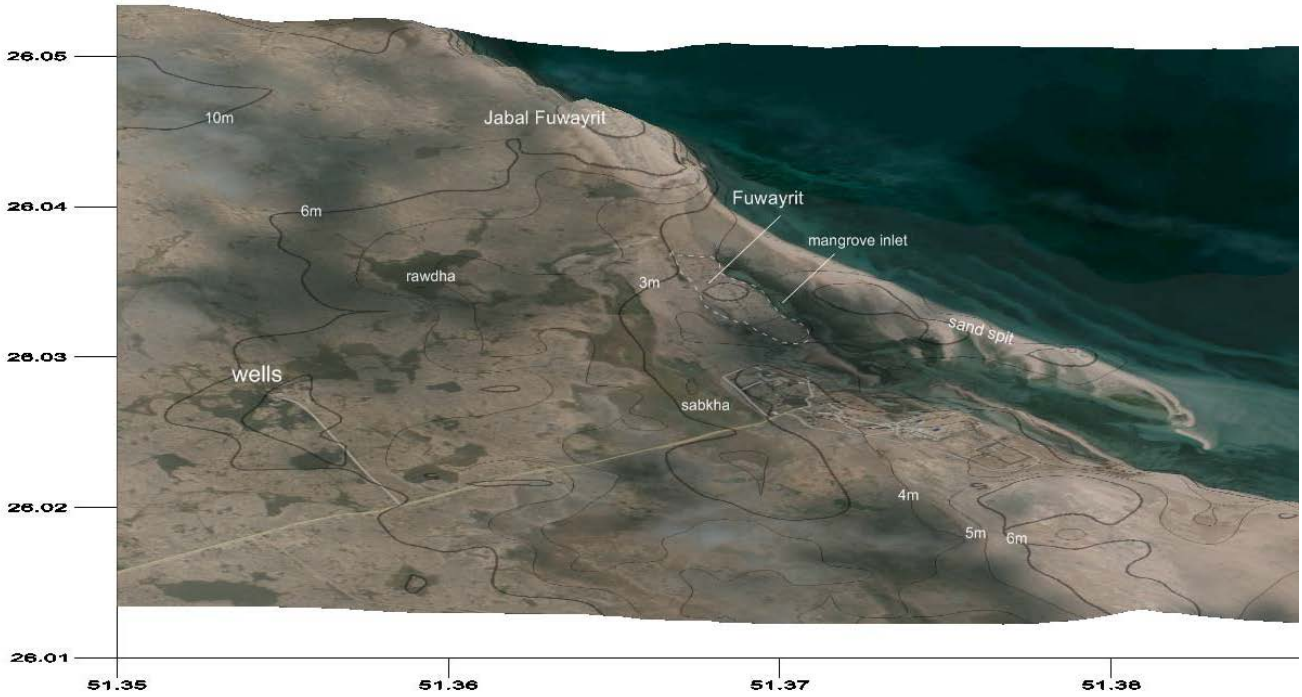



Figure 4.4: Relief and drainage pattern formed across the Dammam Formation with stream traces which broaden to form both rawda further inland, and sabkha closer to Fuwairit

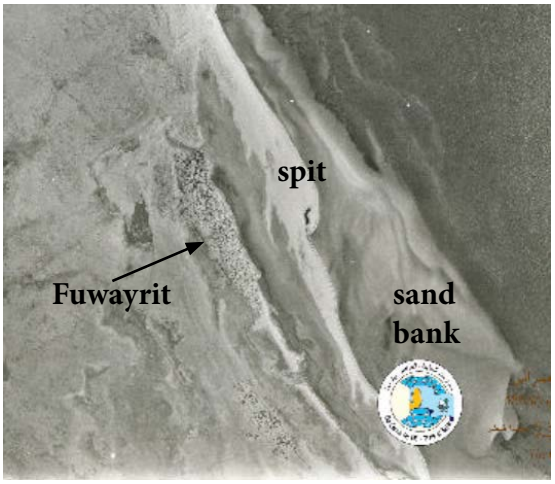



Figure 4.5: Fuwairit sand spit 1958

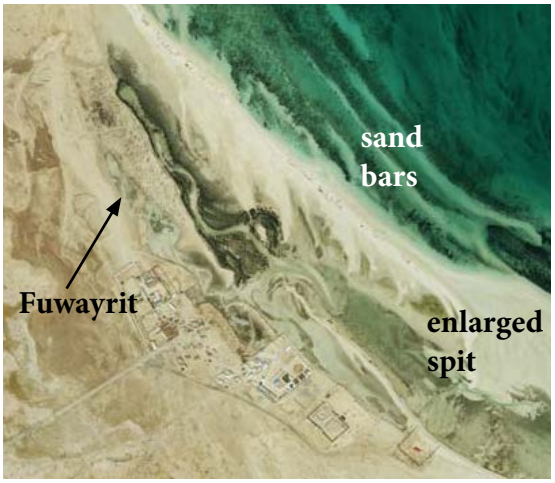



Figure 4.6: Fuwairit and sand spit 2010

Figure 4.8: Tidal channel with flanking mangroves bordering Fuwairit (right foreground)

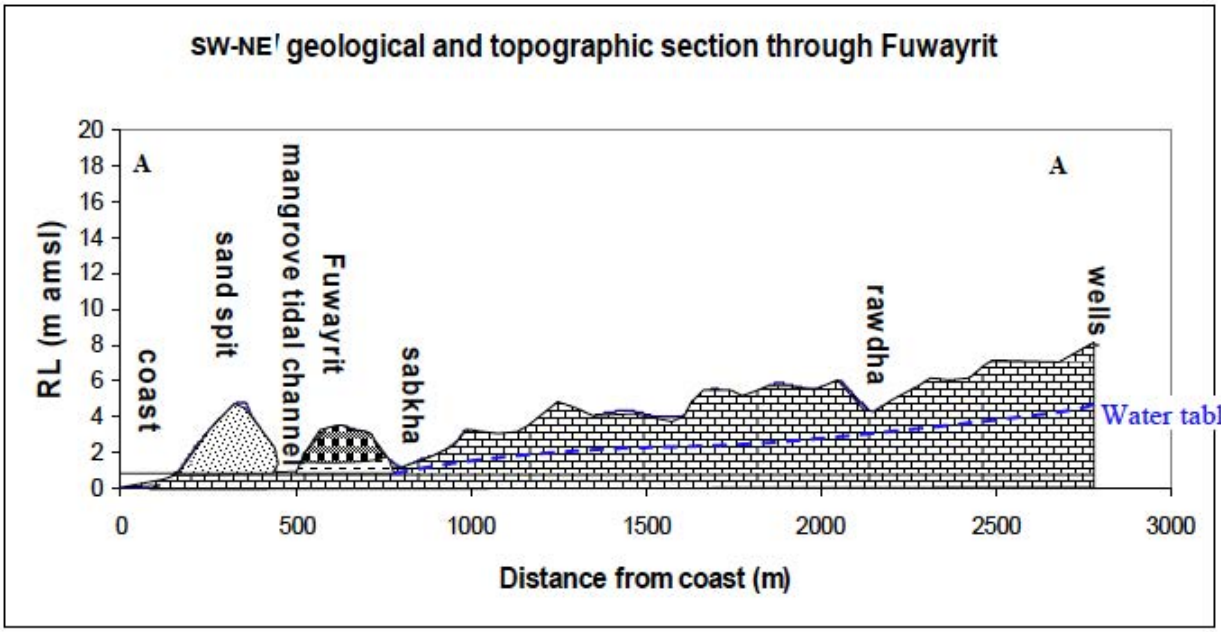
Figure 4.7: Fuwairit town ridge and mangrove lined tidal inlet to the right

There have been landscape changes at Fuwairit since the 1950s, with the enlargement of the sand spit lying to the east of the town, mostly during the 1970s and 1980s (Figures 4.5, 4.6). In the 1950s and 1960s, the spit was relatively narrow, but with a broad shallow sand bank developed offshore. The spit and sand bank gradually merged with the further development of small offshore bars. The mangroves were not present in 1958, when the area was a sandy tidal inlet. The present distinct tidal channel formed following establishment of the mangroves (Figures 4.7, 4.8).

*Geology in the Fuwairit - al-Ghariyah region*

A geological and topographic section showing the water table (line A-A -Figure 4.9) is shown passing from the coast at Fuwairit inland to a farm at Feleeha where there are a number of wells, which probably provided water for Fuwairit.

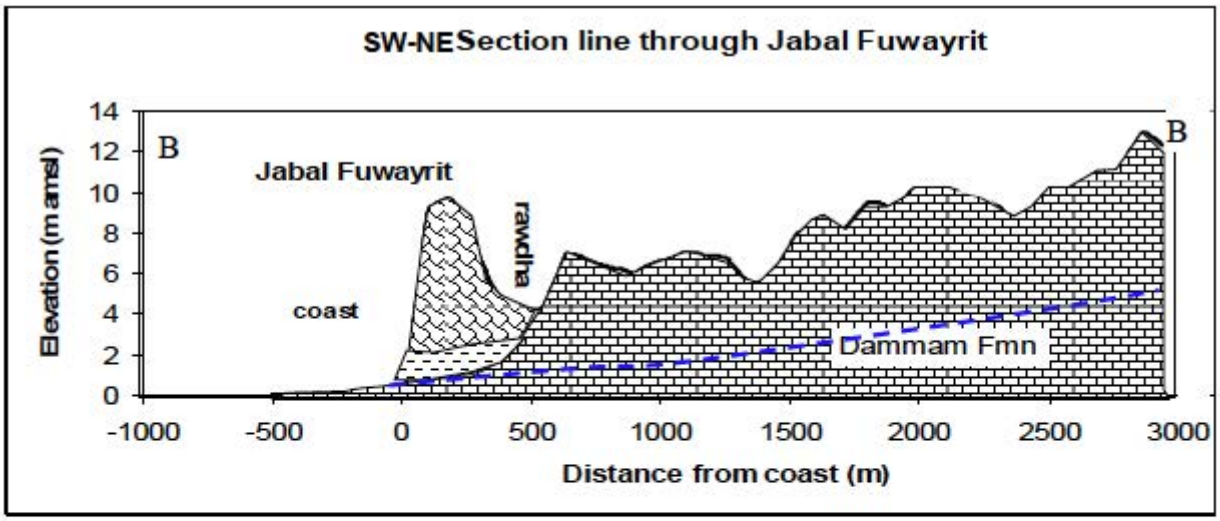
A second B-B section line (Figure 4.10) passes inland through Jabal Fuwairit, showing the more elevated hinterland against which the aeolianite accumulated. The aeolianites are underlain by beach and shallow marine sediments, from which they are derived by deflation. The underlying marine/beach sequences are best observed between Fuwairit and the Jabal, and to the south nearer al-Ghariyah. (see below).




Legend:

- Fuwayrit ruins
- Sand spit (recent)
- Shallow marine and beach sediments (Dabb'iya and Futaisi Members of the Fuwayrit Formation (Eemian - Late Pleistocene)
- Dammam Formation (Eocene)
- Water table with groundwater salinity show at bottom of figure

Figure 4.9: SE-NW Geological (diagrammatic) and topographical section 'A-A' through Fuwairit




- Aeolianite (Wusayl Member of the Fuwayrit Formation –Eemian – Late Pleistocene)
- Shallow marine and beach sediments (Dabb'iya and Futaisi Members of the Fuwayrit Formation - Eemian - Late Pleistocene)
- Dammam Formation (Eocene)
- Water table

Figure 4.10: SE-NW Geological section line 'B-B' through Jabal Fuwairit

*Dammam Formation and the al-Ghariyah Fault*

The Eocene cryptocrystalline marine dolomitic limestone of the Dammam Formation, which forms the surface across much of northern and central Qatar, comes close to the coast in the vicinity of Jabal Fuwairit. It seems likely that the position of the aeolianite ridge forming the jabal was determined by the higher ground of outcropping Dammam Formation limestone, which rises to about 18 m above sea level further inland from the coast.

The Dammam Formation forms a coastward sloping plain, which close to the coast is overlain by the Fuwairit Formation consisting of shallow marine and beach sediments and aeolianites forming the jabal. The limestone has a steeper slope to the southeast, which has generated a number of small drainage lines associated with which are areas of rawdha in the upper areas and sabkha at the lowermost ends (Figure 4.11). The position of the high ground is in turn related to the al-Ghariyah Fault (Macumber, 2009), which crosses the coast between Fuwairit and Jabal Fuwairit (Figures 4.12, 4.13).

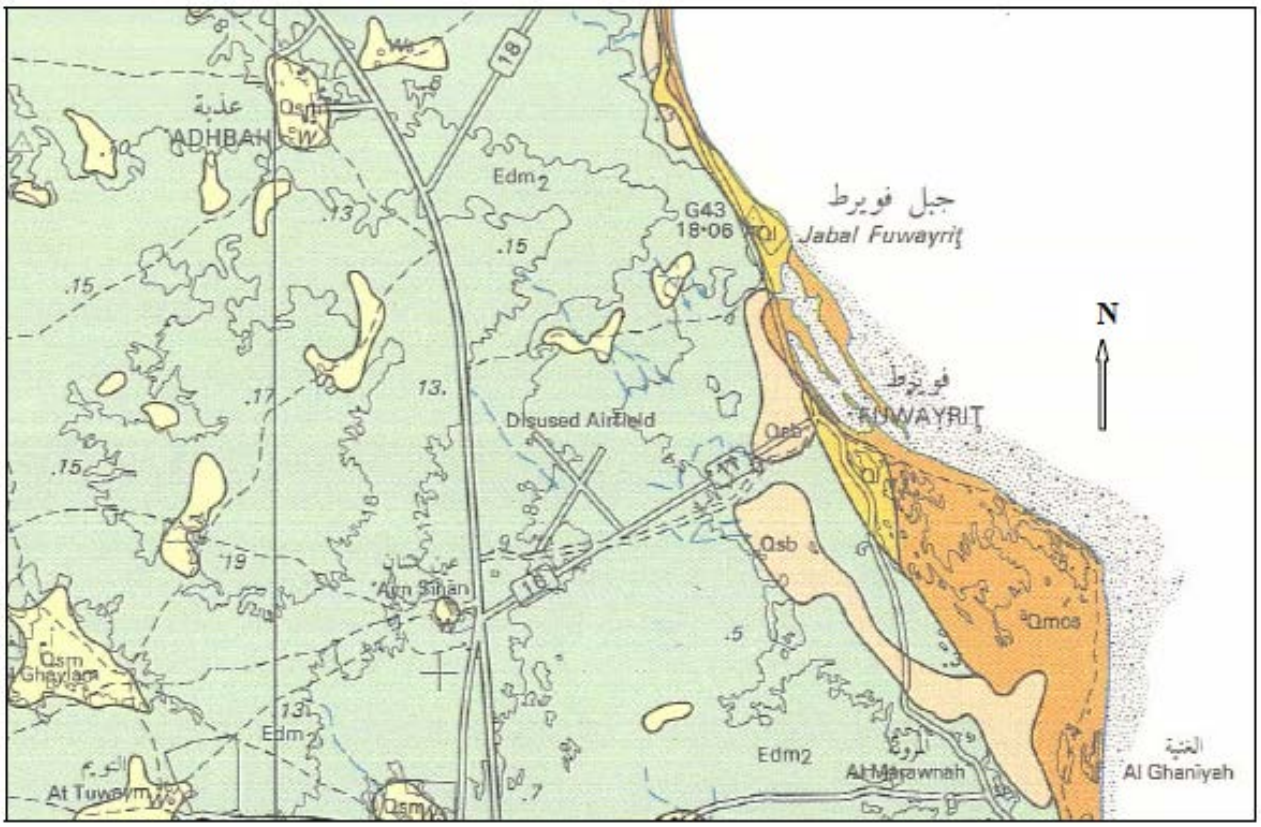



Figure 4.11: Geological map in the vicinity of Fuwairit. (Hunting 1980 courtesy of Neil Munro), note small drainage lines passing eastwards towards the sabkha and associated rawdha.

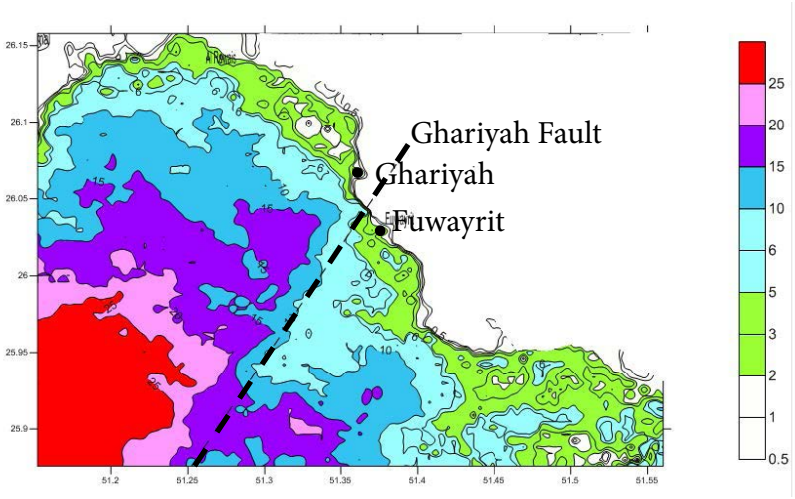



Figure 4.12: Location of the Ghariyah Fault between Fuwairit and al-Ghariyah and its representation to the south. The Eemian coastal terrace lies between the 0 and 6m contours

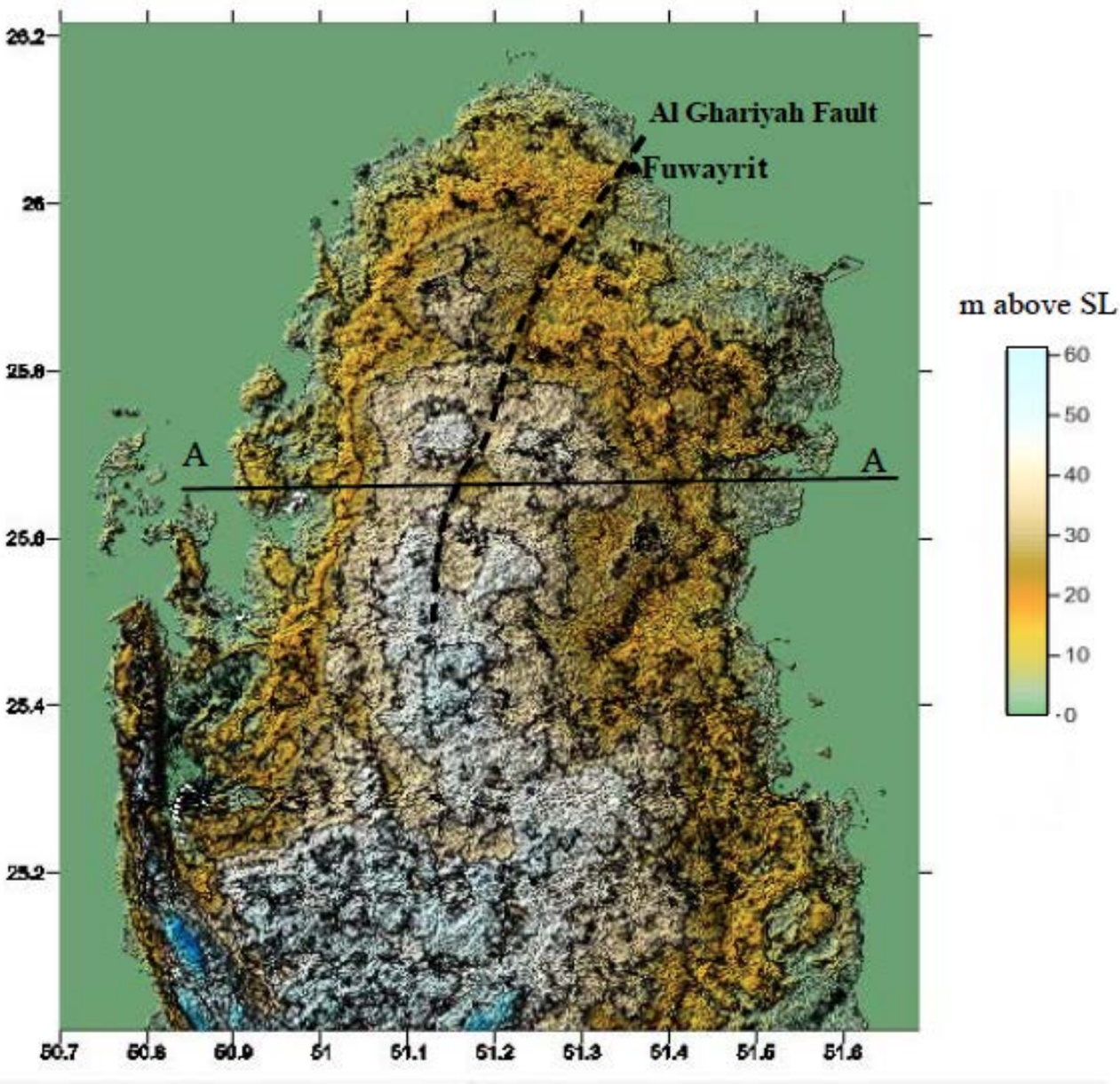



Figure 4.13: Relief map of northern and central Qatar showing Al-Ghariyah Fault

*Shallow marine Fuwairit Formation*

Littoral shallow marine and beach sequences were deposited around the Qatari coastline some 120-130,000 years ago during the last interglacial (oxygen isotope substage 5e - Eemian) when the sea reached levels about 6 m above that at present. As is the case elsewhere they are richly fossiliferous, the most common marine shells being small cerithid gastropods. This event was the earlier of the two most recent marine transgressions, corresponding to interglacial high sea levels, which inundated and sculptured the Qatari coastline.

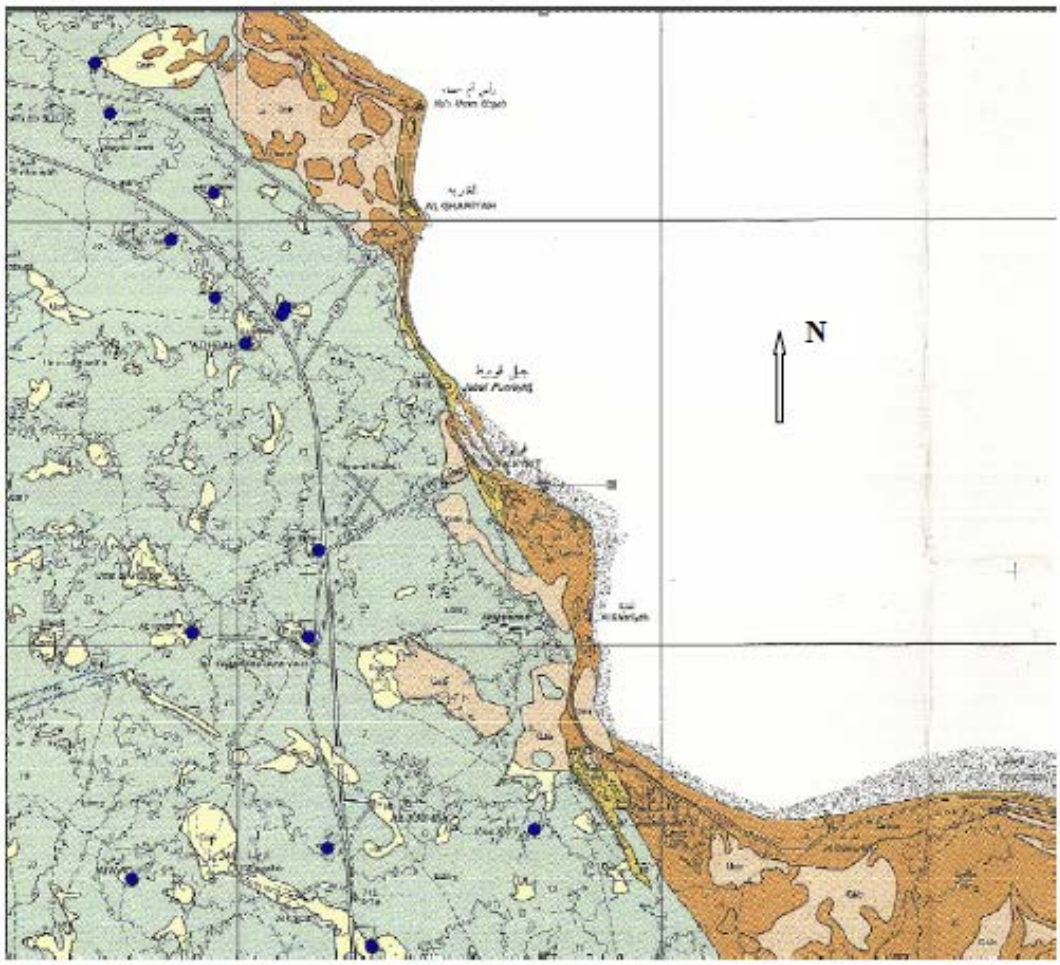
At the height of the intervening glacial period, sea levels fell to be ca 120-130 m below the present between 18,000 and 15,000 yr BP. The following mid-Holocene (Flandrian) transgression saw sea levels peaking at 2.5 m to 3 m above present from between 7,000 and 4,000 years BP, with the regression commencing soon after, and continuing to about 1,000 yr BP. The period of the regression is based on radiocarbon dates from the excavated channel at al-Zubarah (Macumber, 2010, 2011).

The earlier Eemian marine transgression dates to about 117,000 to 130,000 years BP. At Fuwairit, Eemian littoral marine sediments outcrop in a narrow belt extending northwards beyond Jabal Fuwairit; they underlie the town. The extent of the Eemian transgression into NE Qatar is shown on the geological map by the darker orange unit (Figure 4.14). Overlying the shallow marine sediments are a thick sequence of aeolianites which reach a height of 20 m above sea level and form a 2.5 km long ridge parallel to the coast (Figures 4.16, 4.17). The aeolianite is the Al Wusayl Member of the Fuwairit Formation (Figure 4.16) which consists of a suite of shallow marine sediments and derived aeolianites (Williams and Walkden, 2001; 2002).

On the basis of the bedding within the aeolianites, it was determined that the wind direction of the Shamal at the time of deposition was from the north east, and therefore different from that of today where it comes from the north west. The initial transgression led to deposition of shallow marine deposits of the Futaisi and Dubb'iya Members and an aeolian Al Wusayl Member, each separated by a period of sub-aerial erosion (Figure 4.15). The Futaisi and Dubb'iya Members represent sea levels reaching 1.5-2 m and ca 6 m respectively above present sea level. These sediments are the source of the overlying aeolianite.

The shallow marine beach members of the Fuwairit Formation emerge from beneath the aeolianites to the south of Fuwairit and form the structural base on which the town has been built. Although deemed to be up to 6 m thick (Figure 4.15), the shallow-marine/beach sequence has been strongly wind deflated to form a flat surface whose elevation was dictated by the level of the underlying saline water table. This process, referred to as water table bevelling, is perhaps best seen at Ain Mohammad nearer al-Zubarah on the northwest coast of Qatar, where 3m high pedestals of Eemian beach and shallow marine sediments are preserved above the surrounding sabkha, the top of which is itself formed of marine sediments (Figure 4.18). Similarly, remnants of shallow marine sequences occur between Fuwairit and al-Ghariyah both as discrete pedestals and also forming a low ridge between the coast and sabkha/rawdha further inland (Figure 4.19).

Although somewhat obscured beneath the town of Fuwairit, the marine/beach members of the Fuwairit Formation show clearly in areas immediately to the west, where the sabkha impinges on a planated marine surface into which it has eroded small scarps (Figure 4.18, Figure 4.22). The micro-scarps appear to form from under-sapping by groundwater discharge, as the sabkha edge adjacent to the scarps may be quite moist, and small reeds may be present. The thin layer of Eemian sediments overlie a planated Dammam Formation surface (Figure 4.21), formed initially as a wave cut rock platform during the Eemian transgression (see Macumber 2009, 2010). Therefore while the micro-scarp may be cut entirely into the cemented marine/beach sediment, elsewhere the edges consist of a thin layer of marine sediment overlying planated Dammam Formation.




Legend

- Sabkha (saline coastal flats)
- Rawdha (colluvial and alluvial flats)
- Beach and shallow marine deposits (Eemian and Holocene)
- Al Wusayl Member of the Fuwayrit Formation – Eemian phase aeolianite
- Upper Dammam Formation dolomitic limestone – Middle Eocene
- Location of wells recorded on the geological map

Figure 4.14: Geological map of the Fuwairit area (Hunting, 1980)

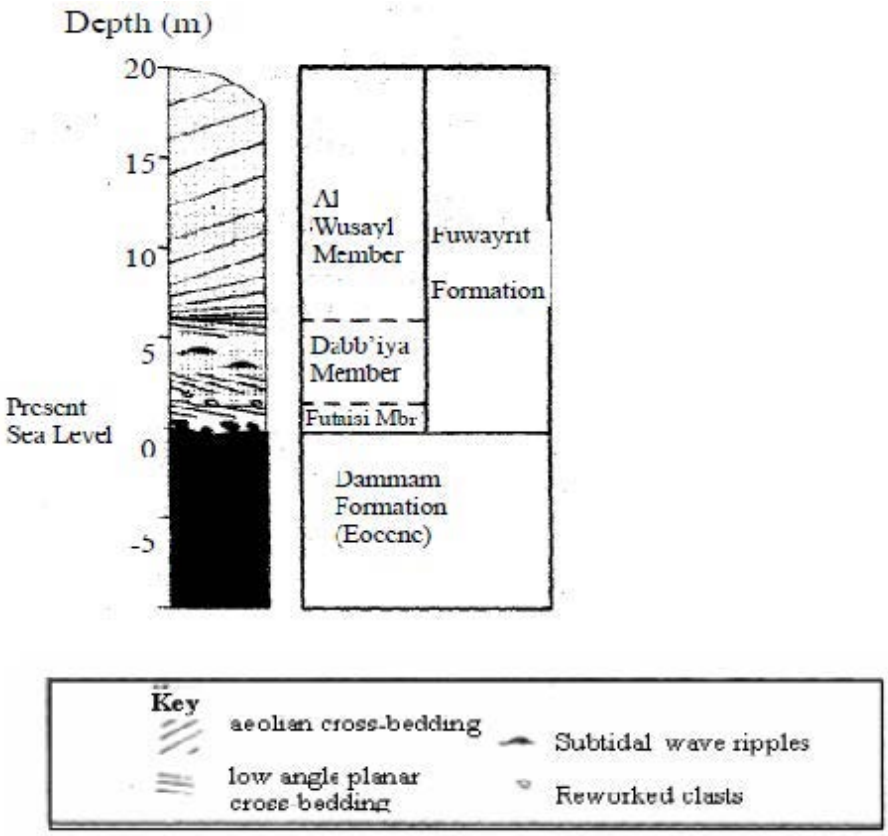



Figure 4.15: Stratigraphy of the late Pleistocene Fuwairit Formation (from Macumber 2010, modified from Williams and Walken, 2002)

Figure 4.16: Aeolianite at Jabal Fuwairit

Figure 4.17: Aeolian cross-bedding at Jabal Fuwairit

Figure 4.18: Pleistocene shallow marine and beach sediments of the Dabb'iya Member with red-brown palaeo sabkha in the background, indicating the extent of deflation

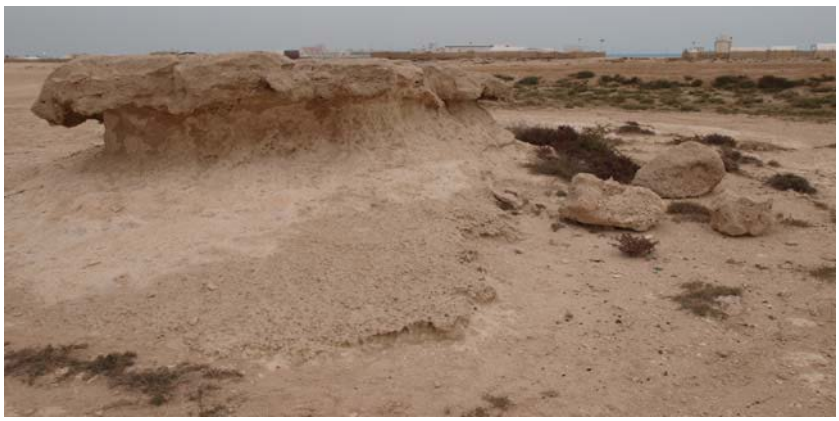


Figure 4.19: One metre high remnant of pedestal of marine Fuwayrit Formation occurring to the east of al-Ghariyah

Figure 4.20: Dabb'iya Member of the Fuwairit Formation marking the edge of the sabkha (background) at Fuwairit

Figure 4.21: Shelly marine Fuwairit Formation overlying Damman Formation near Fuwairit

Figure 4.22: Eroded edges of the Fuwairit Formation at Fuwairit, at its junction with the sabkha

### 4.2.3 Water Supply for Fuwairit and al-Ghariyah

Like all northern Qatari towns, Fuwairit was entirely dependent on groundwater for its water supply. The town is one of a number scattered across northern Qatar between Al Zubarah and Fuwairit for which the groundwater derived from the calcareous (carbonate) facies of the Rus and Umm a' Rhaduma Formations limestone aquifer is the freshest in Qatar. (Figure 4.23). Elsewhere the aquifers are gypseous and the groundwater quality is poorer.

A number of wells appear on the geological map of Qatar (Hunting, 1980), and, although only a guide, the map shows them to be set back from the coast away from the influence of seawater intrusion. In addition three sites (marked as crosses) have been added to the map – two to the west of Fuwairit and one to the west of al-Ghariyah. One well located in an area of grassy rawdha close to an abandoned airstrip, appears to have been more recent (Figure 4.24), the other two are traditional sites and provided water to the respective nearby towns. In the case of both Fuwairit and al-Ghariyah the nearest wells appear to be located about 1.6 to 3.0 km inland of the towns. To the west of Fuwairit, wells are located at Feleeha where they are now associated with a modern day farm (Figure 4.26), those to the west of al-Garriyah are associated with ruins representing a number of buildings, a small cemetery and perhaps a small fort. In the latter case such features are a common characteristic associated with town supply bores occurring whereby the well field is some distance from the coastal town.

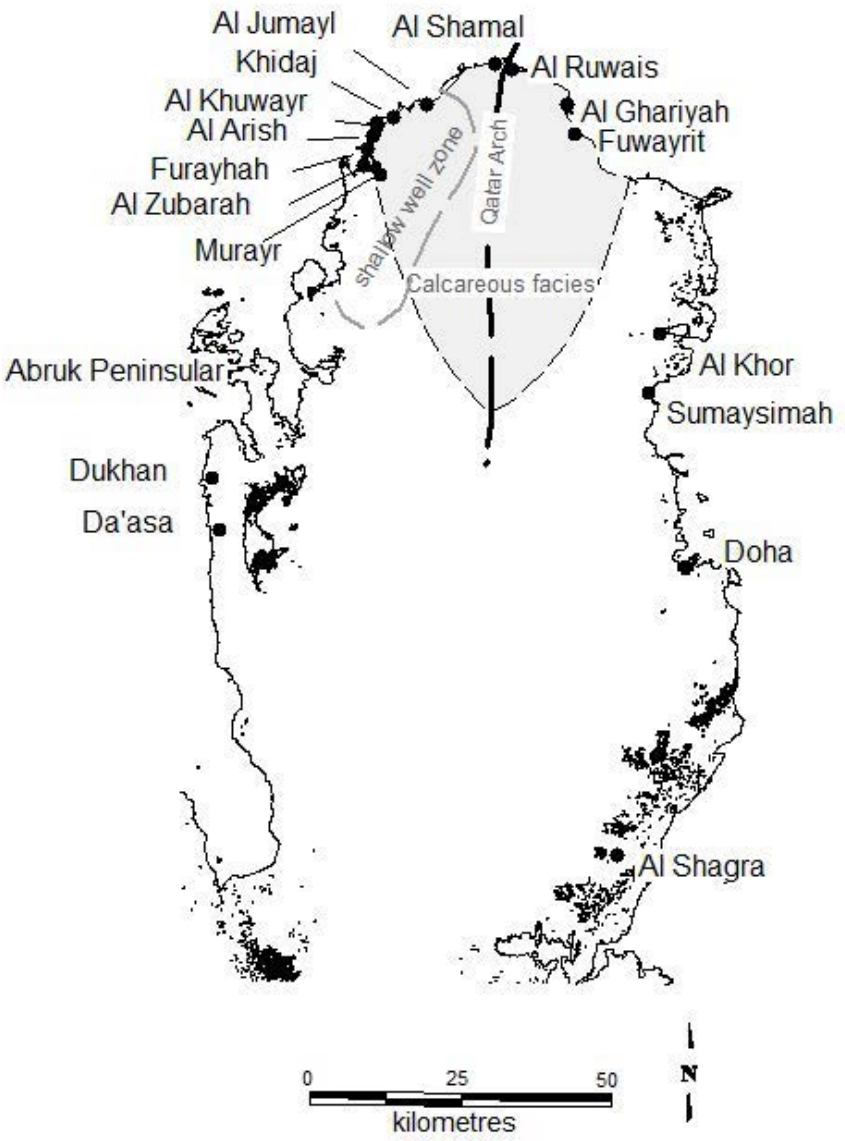



Figure 4.23: Relationship between freshwater and town distribution across northern Qatar

Figure 4.24: Well in rawdha with water within 2m of the surface - at airstrip 2.9km west of Fuwairit

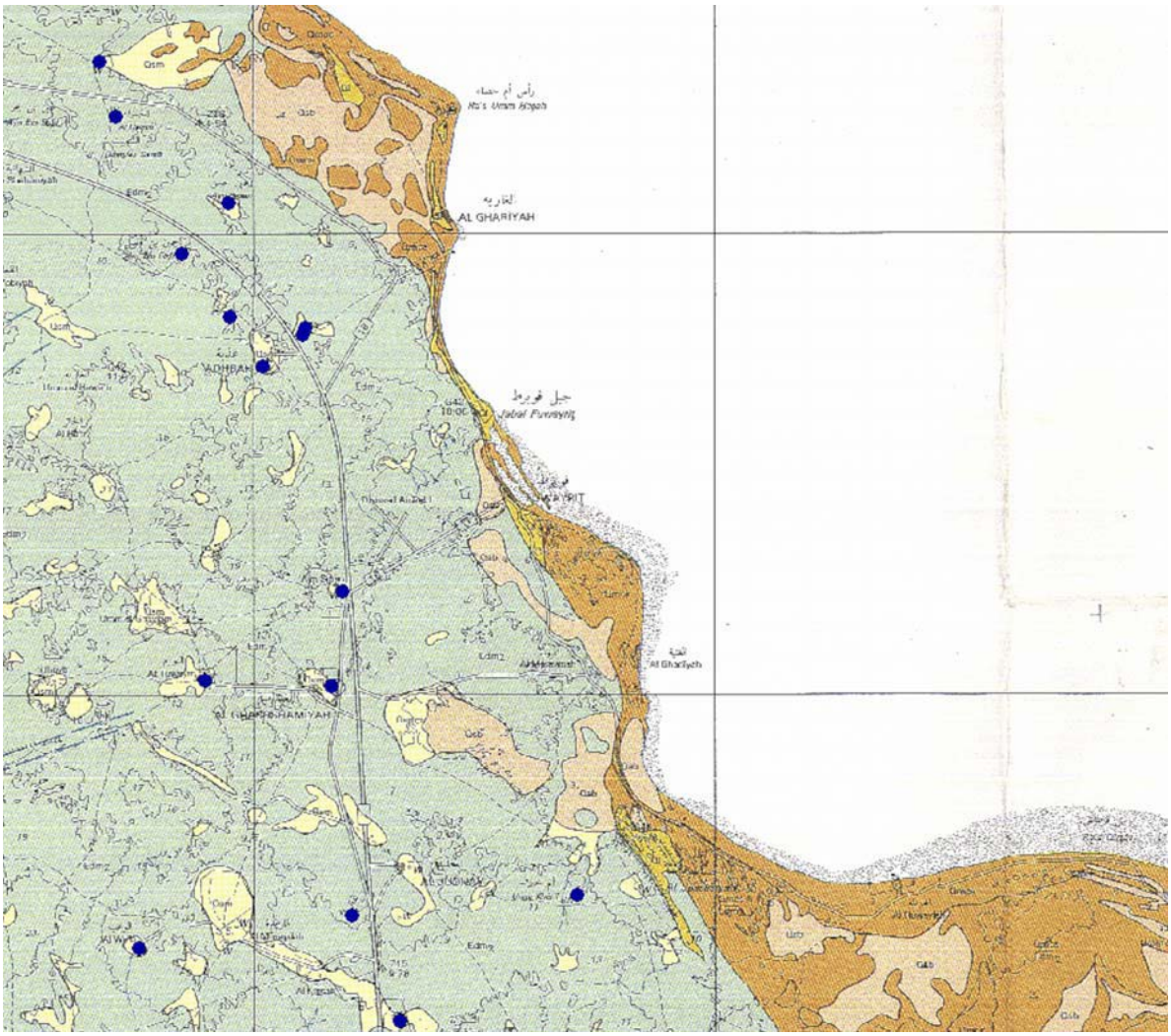



Figure 4.25: Well distribution in the Fuwairit - al-Ghariyah area, inland of the sabkha

Figure 4.26: More recent and older infilled wells located at Feleeha about 1.6km west of Fuwairit

Figure 4.27: Hand-dug wells at ruins west of al-Ghariyah - ruins in background

Figure 4.28: Grassed rawdha with ruins near wells west of al-Ghariyah

More generally, a number of wells are marked on the geological map as occurring closer to the highway, often associated with towns such as al-Adhbar west of al-Ghariyah and Ain Sinan west of Fuwairit (Figure 4.25). It seems likely that these towns, as was the case with Murayr and Al Zubarah, existed as 'twin-towns' - one coastal and one inland – each providing different resources with fish from the coastal towns and water and perhaps agricultural produce from the corresponding non-coastal settlement.

The freshwater wells providing for the coastal towns are set well back from the coast away from the influence of modern saline seawater intrusion and that occurring beneath nearby sabkha, which are also underlain by saline water due to coastal groundwater discharge (Macumber, 2009, 2010). The supply wells are most commonly found in areas of rawdha where the freshwater lens may be recharged during heavier rainfall events (Figures 4.27, 4.28). Water tables are shallow (Figure 4.24). This is a common characteristic of wells located on the near coastal plain whether located on the Eemian terrace, or on the Dammam Formation.

Apart from permanent wells, in the Freehah - al-Ghariyah area, modern 'water harvesting' is/ was carried out from scoop or dragline depressions excavated on the base of the rawdha where water collects during wetter events (Figure 4.29). Unlike the groundwater fed wells, they are essentially opportunistic, being filled only during and after major rainfall events.

A further method of water harvesting/storage was observed in the vicinity of several wells located near al-Adhbah, coastward of the highway adjacent to al-Ghariyah were small ponds/plots were located close to the larger well (Figure 4.30).

Figure 4.29: "Dragline" depressions in rawdha west of Fuwairit

Figure 4.30: Shallow wells shown on Geological Map east of al-Adhbah - the highway is in the background

This technique was also a feature in the area lying between al-Sidriyah and Umm al-Kilab (see below), where a number of roundish ponds were established on the bare rawdha, and the ponds filled during storm events. Across Qatar, interconnected rawdha provide the basis of a poorly connected drainage system, with shallow fluves. The system has considerable antiquity which reflects processes probably commencing in the late Tertiary period and especially active during the last interglacial period from 130,000-113,000 yr BP, when the climate was significantly wetter. However, because of the low relief and low rainfall, there is mostly only a small upper catchment to support the fluves, and internal drainage is the norm. The collection of water on the surface of some rawdha is enabled by the relatively low permeability of the varyingly thick silty clay deposits washed in from the surrounding higher ground, which commonly form the base of the rawdha, (Figure 4.32).

While the freshwater lens may largely represent sub-fossil water which infiltrated during the period between 9,000 to 6,000 yr BP, when the Inter-Tropical Convergence Zone migrated west across Arabia and northern Africa, modern day recharge to the freshwater lens also occurs from storm events. This is shown by the significant amounts of tritium recorded in the groundwater (Lloyd et al., 1981). The rawdha commonly show the deep wheel ruts of vehicles indicating wet conditions, during which the rawdha may be flooded to form very shallow lakes, as recorded by Dr Tobias Richter during the winter of 2011 from areas close to the ruins of Umm al-Qubur, situated about 5 km east of Furayhah (Figure 4.31).

While the rawdha may be cut virtually across the Dammam Limestone, elsewhere there is a significant deposit of reddish-brown silty clay derived from the surrounding limestone areas (Figure 4.32). Commonly, the silty clay floor has a finely developed pattern of anastomosing channels covering an area of a few hundred metres square, similar to that described from al-Sidriyah (Macumber, 2011). The individual channels may be deeply eroded to form an internally draining channel system across the rawdha floor (Figure 4.33).

The area is one of 'patterned ground', with the shallow water table exposed in a nearby dam/well. The drainage pattern formed by numerous small anastomosing channels referred to as playettes (Macumber, 1969; 2011) forms at the lowest parts of the landscape and is at times associated with medium to large trees (Figure 4.34, Figure 4.35). The trees indicate the presence of locally recharged shallow fresher water. The landscape of rawdha, trees and playettes is often one where hand dug wells occur, showing occupation (Figure 4.36).

The origins of the anastomosing pattern have been related to shallow water tables (Macumber (1969; 2011) arising in this instance from the occasional flooding of the rawdha, during which period the water tables rise rapidly towards the surface (cf Macumber, 1991). Conversely, as the temporary lake dries in response to evapoation and infiltration, inbank storage from the slightly higher areas of the rawdha floor and perhaps the adjacent limestone weep out, resulting in peripheral sourced drainage network flowing towards the lowest points in the rawdha, reinforcing any small channels developed across the lowermost rawdha floor. The infiltration process may be reinforced by the karstic nature of the limestone aquifer.

While the rawdha may be grassed or even treed, in other instances it is mostly bare other than scattered small bushes. In the vicinity of Umm al-Kilab, a number of oval to round 'ponds' or 'plots' have been established, which are deemed to be part of a modern water harvesting system which collects water during storm events. In such cases, the bare ground has been divided by small check banks into plots to pond water. In one instance a flume was observed on a short channel joining the plots (Figure 4.37 to Figure 4.39).

The relationship between bare rawdha, trees, wells and plots may be seen in Figure 4.40, 4.41 and in Figure 4.47 and its relationship with early occupation at Umm al-Kilab is discussed in Section 4.2.4.

Figure 4.31: Flooding of the rawdha in the vicinity of Umm al-Qubur (photo courtesy of Dr Tobias Richter)

Figure 4.32: Silty clay forming the floor of an area channelled rawdha at a well site to the west of al-Mafjar

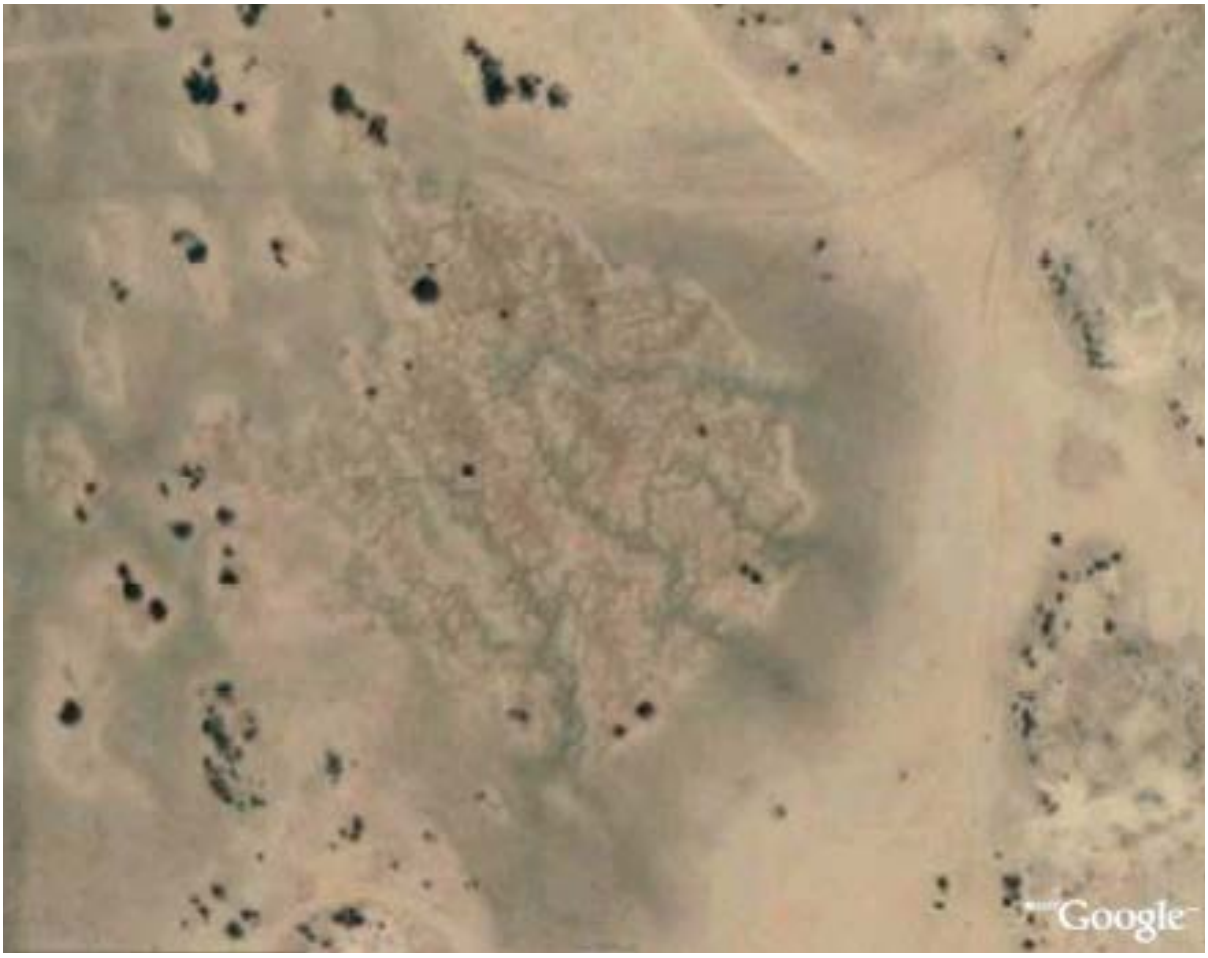



Figure 4.33: Channels having a playette drainage pattern on the floor of a rawdha near Umm al-Kilab

Figure 4.34: Typical channelled playette drainage pattern (foreground) formed on the lowermost parts of the rawdha floor where the channels are commonly associated with trees - locality, al-Sidriyah

Figure 4.35: Light scattering of trees in rawdha near Umm al-Kilab indicating groundwater availability. The area surrounding the trees has a typical playette pattern

Figure 4.36: Well near Umm al-Kilab

Figure 4.37: Plots on bare rawdha in the vicinity of Umm al-Kilab

Figure 4.38: Plots on bare rawdha in the vicinity of Umm al-Kilab

Figure 4.39: Plots on bare rawdha in the vicinity of Umm al-Kilab

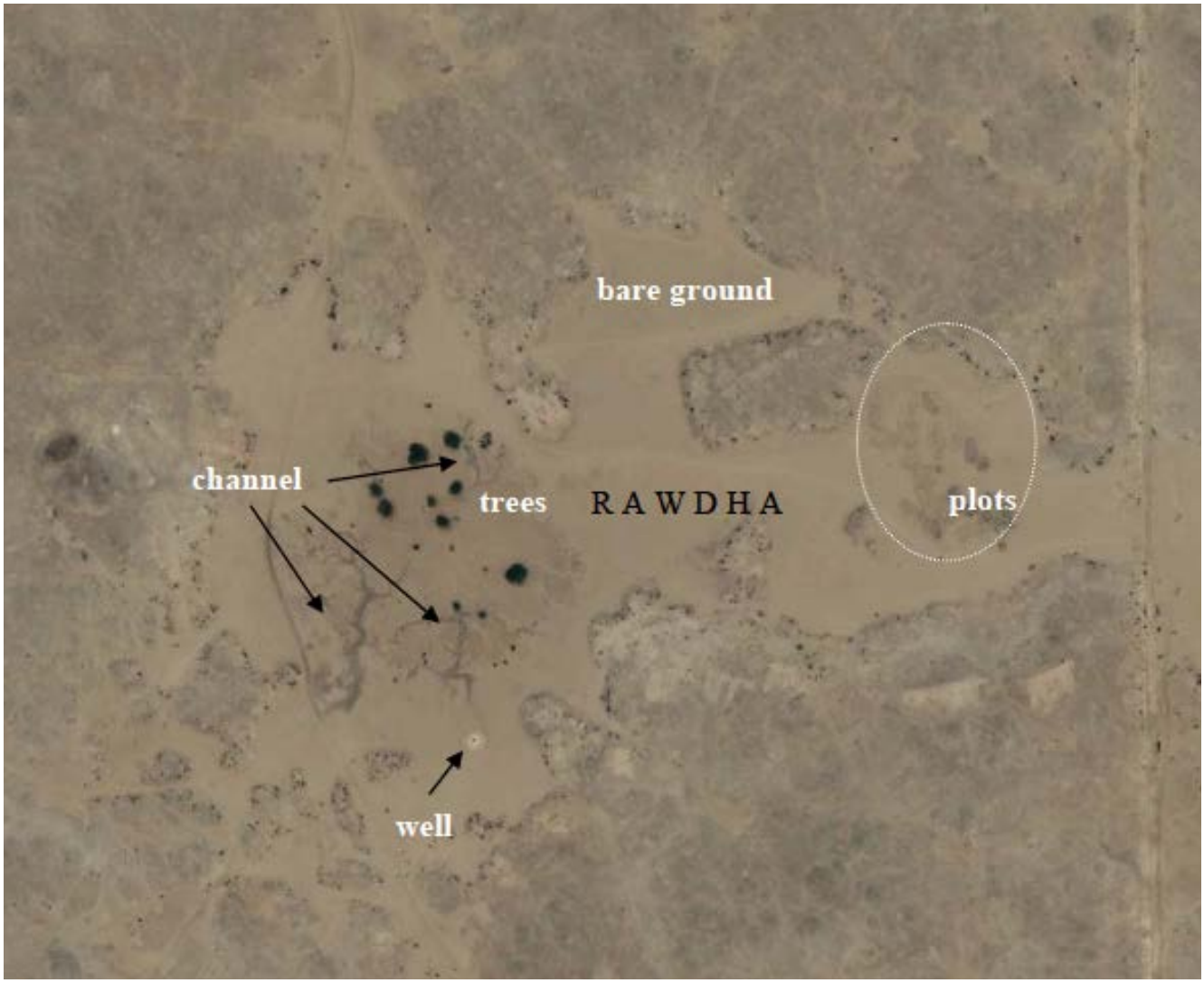



Figure 4.40: The landscape association of rawdha, wells, channels, trees and occasionally plots in the vicinity of Umm al-Kilab

Figure 4.41: Bare rawdha floor with trees in the background indicating freshwater at a shallow depth

### 4.2.4 Early occupation and the rawdha landscape association

The rawdha landscape association described above is a setting highly favourable to occupation. The rawdha are extensive across Qatar (Figures 4.42; 4.43); however, there are limitations to settlement determined by groundwater salinity.

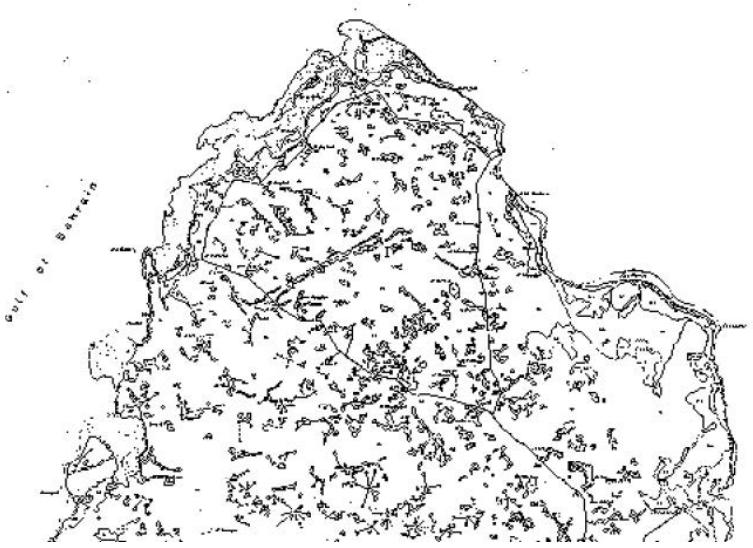


Figure 4.42: Drainage pattern across northern Qatar (Eccleston et al. 1981)

The presence of large trees and tree coppices provide a guide to both water presence and quality of the groundwater. Examples of inland settlements include the ruins at Umm al-Qubur (Figure 4.44, Figure 4.45) where occasional flooding guarantees the development and replenishment of the freshwater lens, Ghaf Makin (Figure 4.46), al-Sidriyah, and the earlier site at Umm al-Kilab. These settlements are located on the Dammam Limestone in contrast to the irrigation settlements closer to the coast at Qal'at al-Thaqa'ab and al-Jiffarah which are situated on the upper parts of the Eemian terrace (Macumber, 2011).

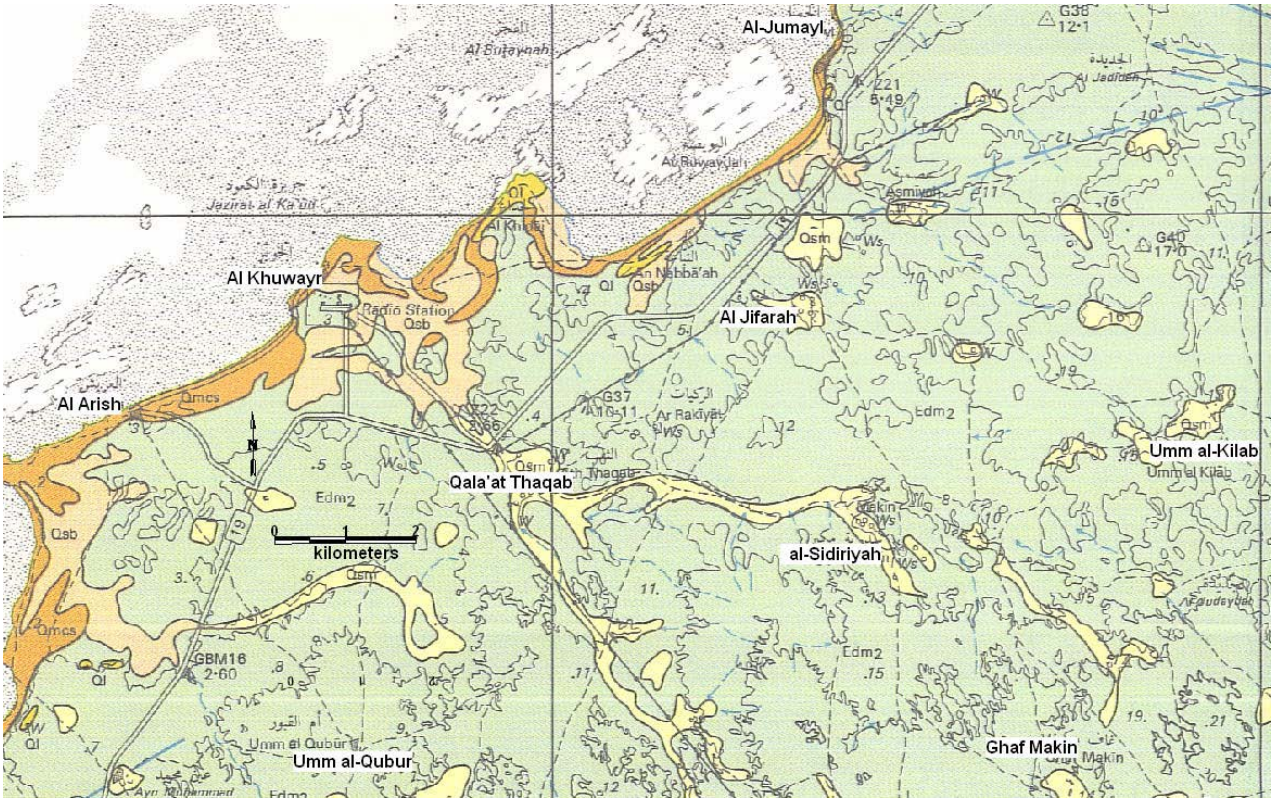



Figure 4.43: Coastal towns and inland localities and associated rawdha (geology from Hunting 1980)

Figure 4.44: Ruins at Umm al-Qubur with trees and well in background

Figure 4.45: Well at Umm al-Qubur

Figure 4.46: Ruins at Ghaf Makin overlooking extensive rawdha

In a similar setting near Umm al-Kilab overlooking a nearby rawdha are linear ruins stretching along a distance of 400 m (Figure 4.47 to Figure 4.52). At the south western end, the ruins contain an elongated 30 m long rectangular structure with a number of rooms. Two further single detached structures were present at either end, and a number of others extending in a line for 400 m to the north east flanking the rawdha. Although over 6 km from the coast, gastrapod shells dominated by conus sp. were scattered throughout the village with a large number of shells forming part of a small mound at the north-eastern end (Figure 4.50). Included in the pottery from the village were a number of turquoise coloured sherds. *Conus* shells are known to be variously poisonous to humans and their toxin has no known antivenine. One species *Conus magus* has recently shown promise as a non-addictive pain reliever, more than 1000 times as powerful as morphine.

The ruins lies alongside a rawdha/wadi system which is eroded into an area of plateau lying between the 15 and 16 m contours.. The wadi passes westward towards the village of al-Sadriyah lying about 6 km away at an elevation about 10 m above sea level. There are several modern wells in the rawdha close to the village, these include a government observation well and a relatively new farm well. While the latter may have been in use for some short time, the sites of earlier wells in the rawdha present at the time of occupation of the village have been lost due to the silting of the rawdha under storm flood conditions. It is assumed that they would have been in the nearby rawdha, in the vicinity of the present wells, and perhaps in the playette area to the southwest (Figure 4.47)

Note the low areas to the south of the village where the hand-dug wells supplying water were probably established. On passing down-valley, the ancient town (now ruins) of al-Sidriyah is only 6 km away established at the head of a small embayment passing towards the coast (Macumber, 2010 and 2011). It is conceivable that a similar aged settlement existed on the route to the coast which emerged between Qal'at al-Thaqab and al Jumayl.

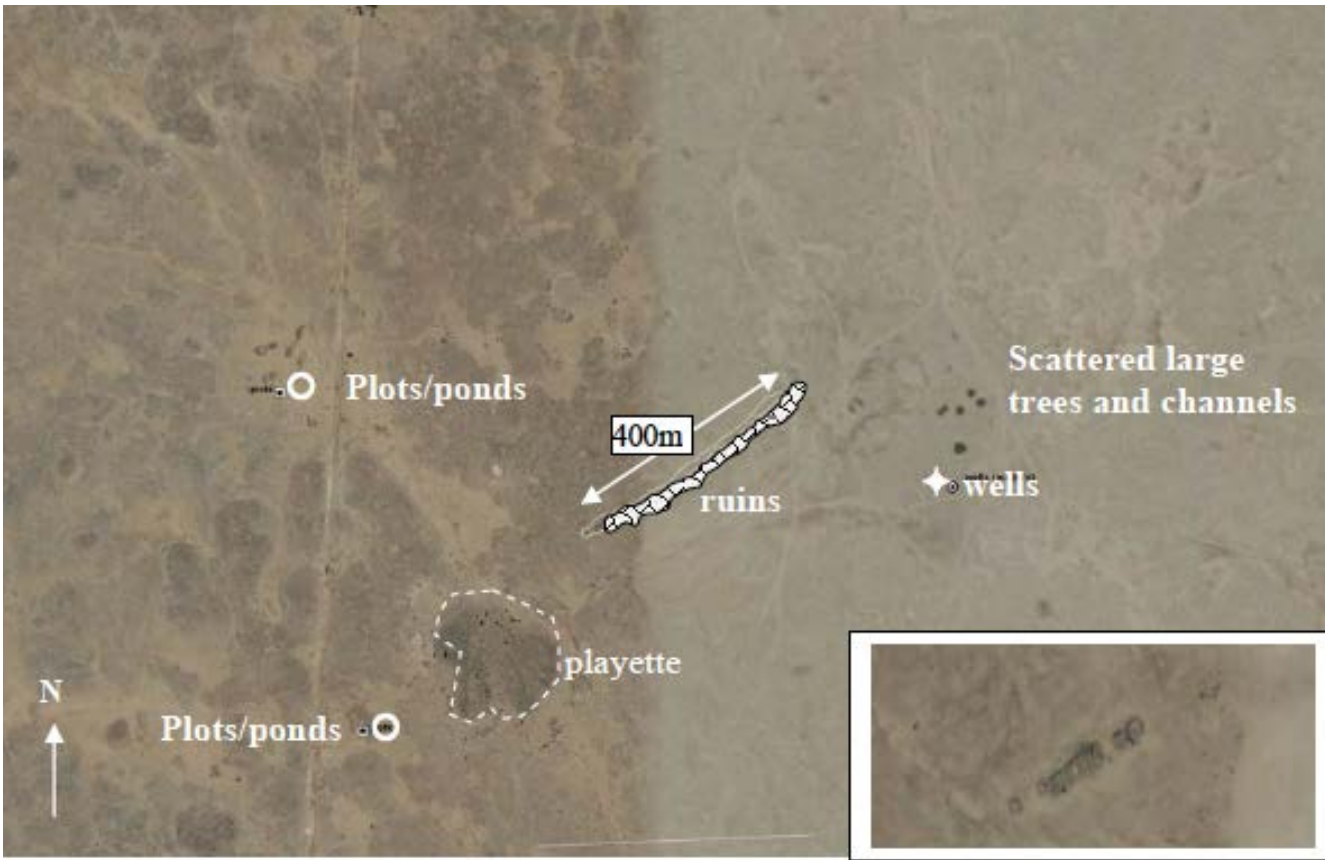



Figure 4.47: Distribution of modern and ancient features near Umm al-Kilab. Inset - 30m long rectangular structure with flanking structures at south-western end of the village

Figure 4.48: House structures near Umm al-Kilab (NE end of 400m long line)

Figure 4.49: Rectangular structure with rooms at SW end of settlement near Umm al-Kilab

Figure 4.50: *Conus* sp. shells amidst stones in a small heap from northeastern end of the ruins

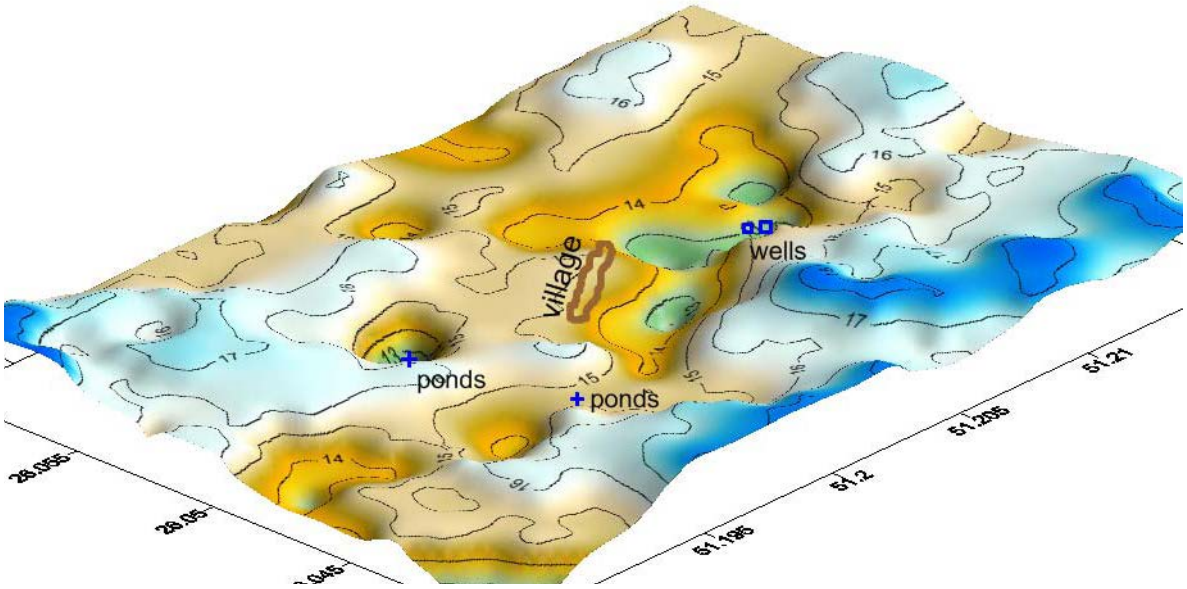



Figure 4.51: 3D figure showing location of village (ruins) on edge of rawdha near Umm al-Kilab

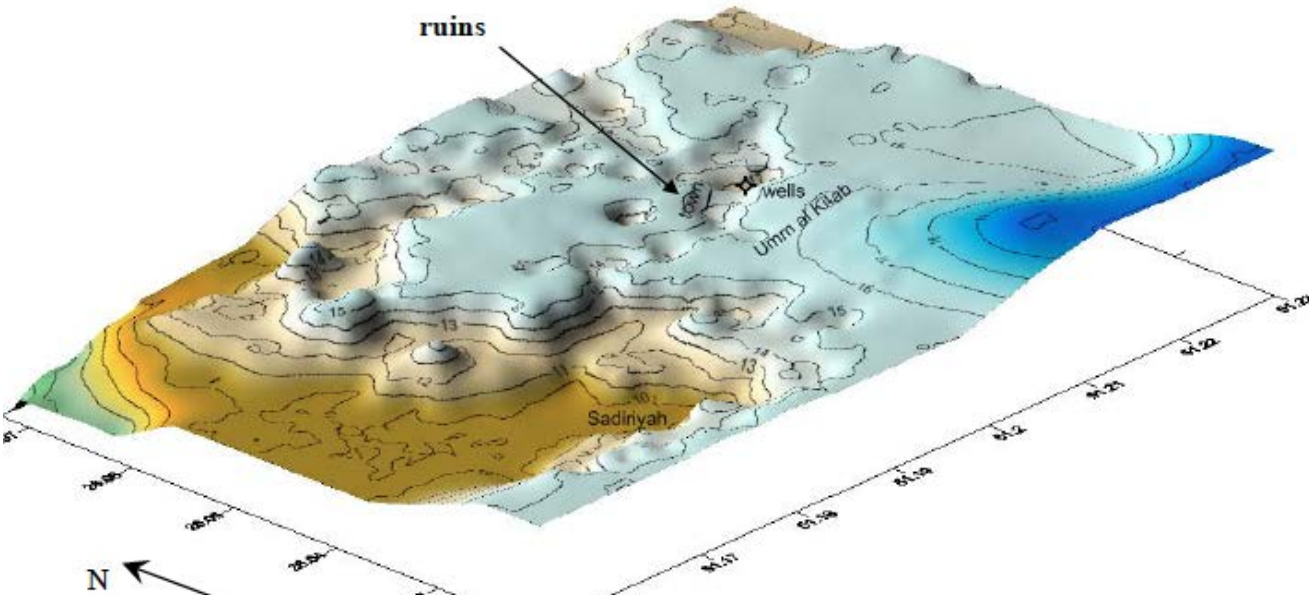



Figure 4.52: Topography in the vicinity of linear ruins near Umm al-Kilab showing the site of al-Sidriyah to the west

### 4.2.5 Water and landscape along the northeast coast of Qatar between Al Ruwais and al-Ghariyah

In 2009 and 2010, the regional geohydrological survey was concentrated on northern Qatar, with an emphasis on the north-western coastline between Al Zubarah and Shamal. In 2011 more attention was paid to the north-eastern coast in the vicinity of Fuwairit, and extending northwards towards Al Ruwais. This region includes the areas around Fuwairit, al-Ghariyah and al Mafjar. The study centred on the rawdha and the wells known from the geological mapping such as that near the sports complex at Al Ruwais (Figure 4.54). In the course of the study a number of additional wells were added to the well distribution map.

The coastal setting for northeast Qatar is similar to that for northwest Qatar, in that there is strong representation of the high sea level impacts during which the two tier marine terrace landscape recorded for the northwest coastline also evolved. This is clearly seen at the coast where the high level wave cut platforms are exposed in coastal sections to the east of Al Ruwais.

The inland limits of the mid-late Holocene Flandrian transgression are shown by the 3 m contour (light grey areas in Figure 4.53), while that of the earlier Eemian transgression is approximately marked by the 6 m contour. As is the case elsewhere the Eemian terrace is formed of marine sediments (identified by cerithids and gypsite), and by planated Dammam Formation shore platform.

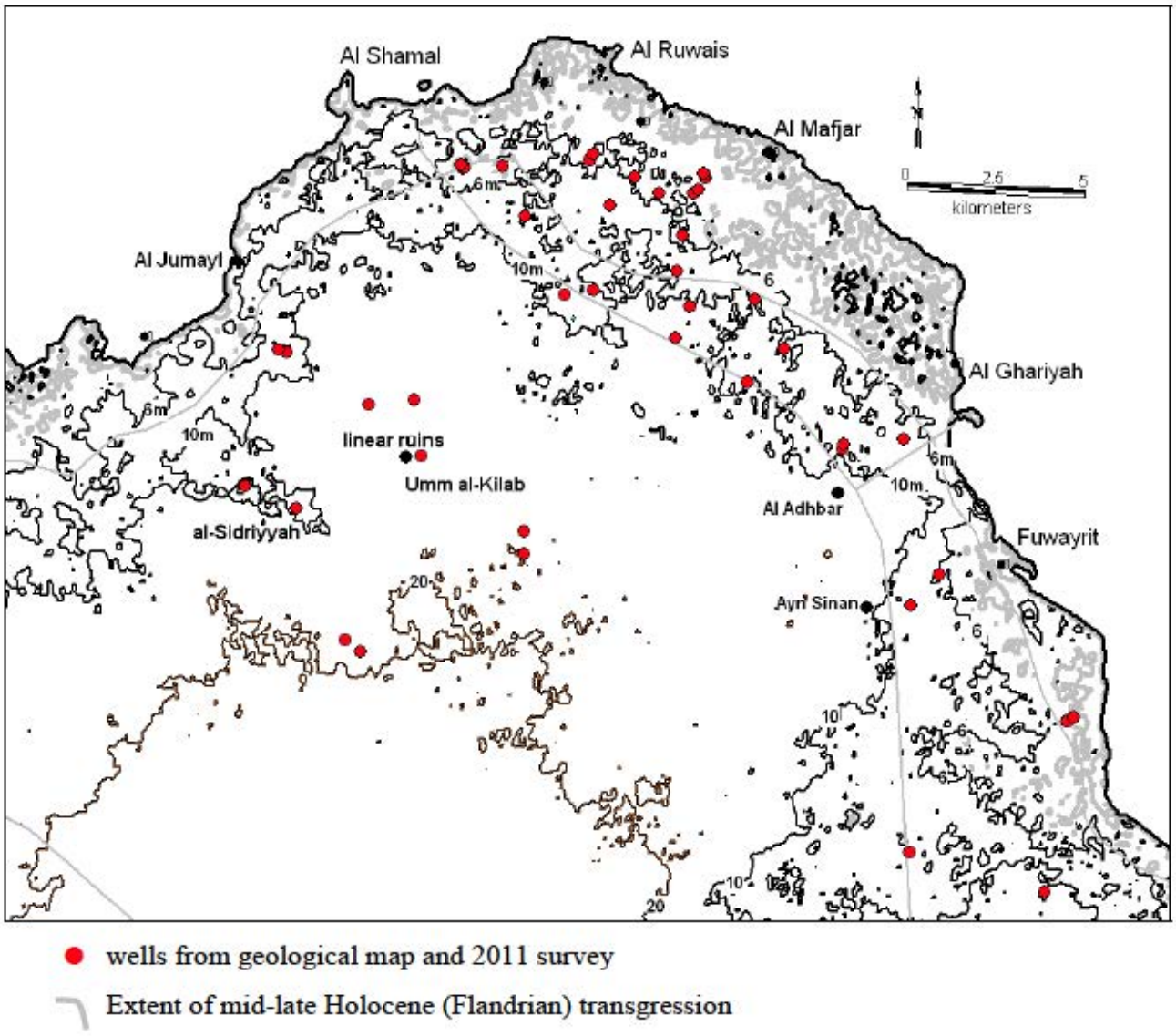



Figure 4.53: Map of northeast Qatar showing relationship between wells and contours

Figure 4.54: Well and structure near sports complex at Al Ruwais

Figure 4.55: Large well/dam intersecting the shallow water table, located to the east of Al Ruwais

Figure 4.56: Infilled well in small rawdha, west of Mafjar

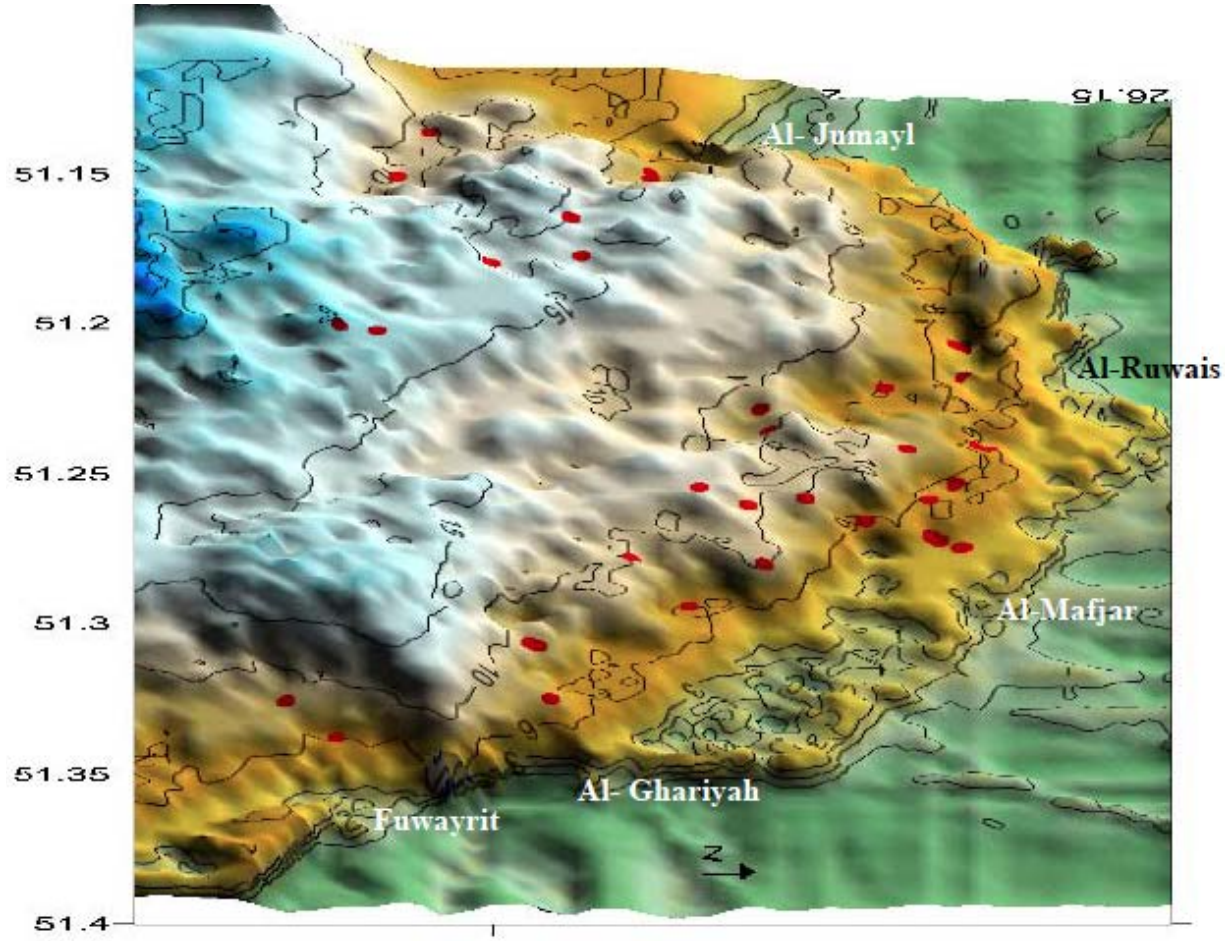



Figure 4.57: 3-D topographic map of NE Qatar from al-Jumayl to Fuwairit with well distribution

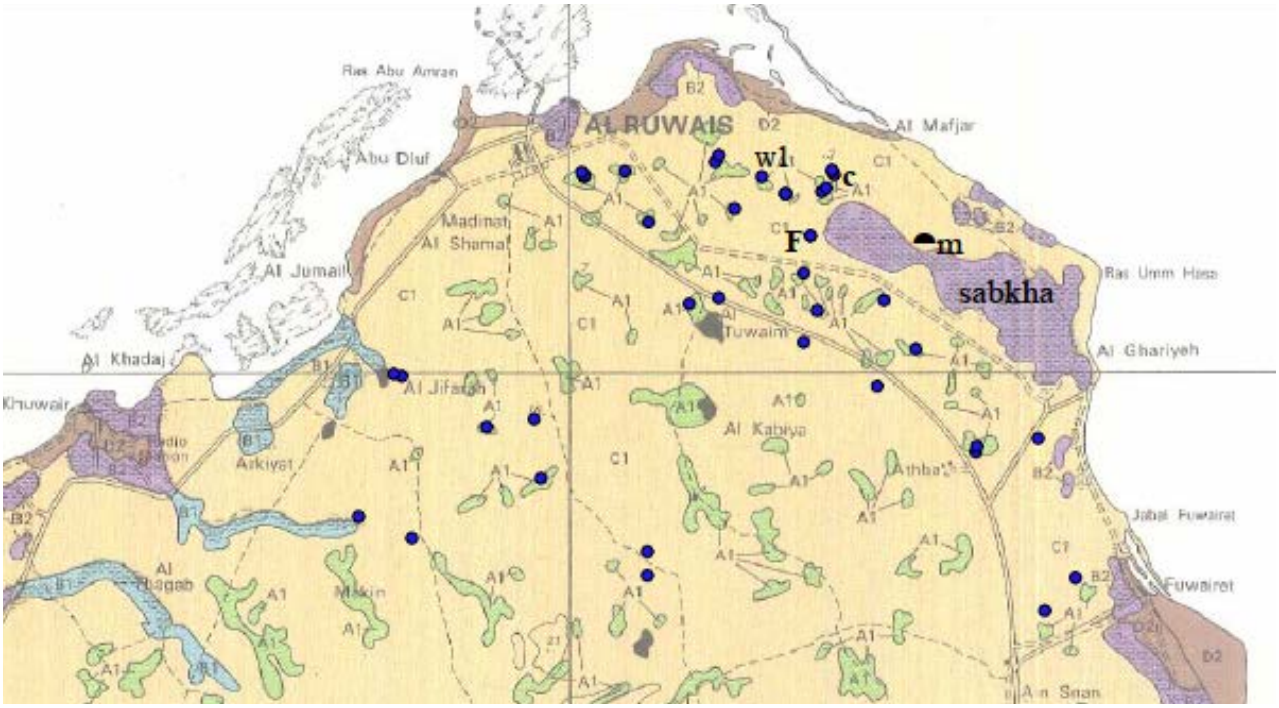



Figure 4.58: Soils map of far northern Qatar showing the position of the sabkha (purple) and small rawdha (green) with which shallow wells are commonly associated. Map courtesy of Neil Munro

In general the 3 m contour marks the upper limits below which active sabkha are common. This was especially clear on passing southwards between al-Mafjar and al-Ghariyah where an extensive area of sabkha is shown in both the geological and soils mapping and on the 3-D topographic map (Figure 4.57) and the soils map (Figure 4.58). On the other hand a large number of shallow wells are located at elevations of between 4 and 6 m on the Eemian terrace.

One clear observation from the survey was the higher density of shallow hand-dug wells between Al Ruwais and al-Mafjar. Wells in this area were found in a number of small rawdha and commonly associated with large trees. As is the case elsewhere with the Eemian terrace, the water table lies at a shallow depth and appears as groundwater outcrop in shallow dam/wells (Figure 4.59, 4.60)

Perhaps the clearest indication of the location of wells relative to the coast comes from the 3-D topographic map (Figure 4.57) showing the coast from al-Jumayl to Fuwairit. Here the majority of wells are located in a zone commencing from about the 10 m contour interval to a position within about 1 km of the coast. The Eemian shoreline lies at or about the position of the 6 m contour, while the sabkha between Mafjar and al-Ghariyah is at elevation of 3 m or less . There are a number of wells on the Eemian coastal terrace, to the west of Mafjar and south of Ruwais, where the water table is shallow.

They are set sufficiently far back from the coast to avoid the problem of seawater intrusion. Between Al Ruwais and al-Mafjar, the wells (mostly now infilled) are commonly associated with small patches of rawdha, where trees are often present, dependant on shallow groundwater. In an area of small rawdha closer to al-Mafjar several wells occur in the vicinity of two small nearby cemeteries (shown as ‘c’ on Figure 4.58). Between al-Mafjar and al-Ghariyah, there is a large area of sabkha, with strongly undulating Dammam Formation bedrock and higher terrace sequences between the sabkha and the coast. However no wells were observed in the undulating area where the groundwater at a comparatively shallow depth is probably saline due to both seawater intrusion and the accumulation of salt beneath the sabkha. However, cairns (Figure 4.61)were observed on some of the higher ground in this area (marked as ‘m’ in Figure 4.58). The nearest group of wells lies on a farm (‘f’ in Figure 4.5858), where walls and hand-dug wells suggest an earlier phase of settlement (Figure 4.59).

Cairns have been recorded from along the eastern coast of Qatar, at al-Khor and the proposed Aerospace City. At al-Khor, where there is Ubaid pottery, 16 cairn burials were recorded of which 6 were excavated. Dates from al-Khor were 6,290 +/- 100 BP, 6590 +/- 120 BP and 6,420 +/- 100 B.P (Inizan, 1988). A little to the south of al-Khor, at Aerospace City, a number of cairns are located on a 4–5 m high Eemian terrace protruding as a small peninsular into the former mid-Holocene sea (Macumber 2011). Like the al-Khor sites, they overlook the mid-Holocene high level shoreline, and are probably of similar age.

Figure 4.59: Modern and hand-dug wells on farm, walls are also present

Figure 4.60: Infilled well with cerithids exposed in nearby sediment (inset) indicating that the site is developed on the Eemian marine terrace

Figure 4.61: Cairns on higher ridges of Dammam Limestone between al-Mafjar and al-Ghariyah

### 4.2.6 Conclusion-Discussion

A large number of wells are shown on the geological map of northern Qatar (Hunting 1980), and this was used as a basis to investigate the environmental setting in north-eastern Qatar between Al Ruwais and Fuwairit. In addition further study was carried out on the relationship between occupation and environment in the hinterland between al-Zubarah and Fuwairit.

There are a large number of shallow wells commonly associated with small rawdha scattered across north-eastern Qatar between Al Ruwais and Fuwairit. The largest distribution is between Al Ruwais and al-Mafjar, and inland of a large sabkha located between al-Mafjar and al-Ghariyah. The number of wells falls off to the south of al-Ghariyah reflecting the decline in small rawdha, but perhaps also reflecting the proximity of the water quality change from the fresher carbonate facies to the gypseous facies of the Rus limestone. Whatever the case, for the towns and their water supplies, the pattern is similar to that in the Al Zubarah region whereby coastal towns receive their water supply from wells located further inland. At al-Ghariyah and Fuwairit, small well-fields occur back from the coast, however the towns also appear to be 'paired' with larger settlements, as is the case of Adhbar and al-Ghariyah, and Ayn Shan and Fuwairit.

On the hinterland well away from the coast, there were fewer areas of rawdha but they were considerably larger. This was the case at Umm al-Qubur, and near Umm al-Kilab. The larger rawdha have larger local catchments, and flood during winter storm events. This leads to groundwater recharge. In a number of instances shallow fresh groundwater was implied by the presence of scattered large trees, and supported by the presence of wells, indicative of occupation.

## 4.3 Regional Survey and mapping

*David Mackie and Daniel Eddisford*

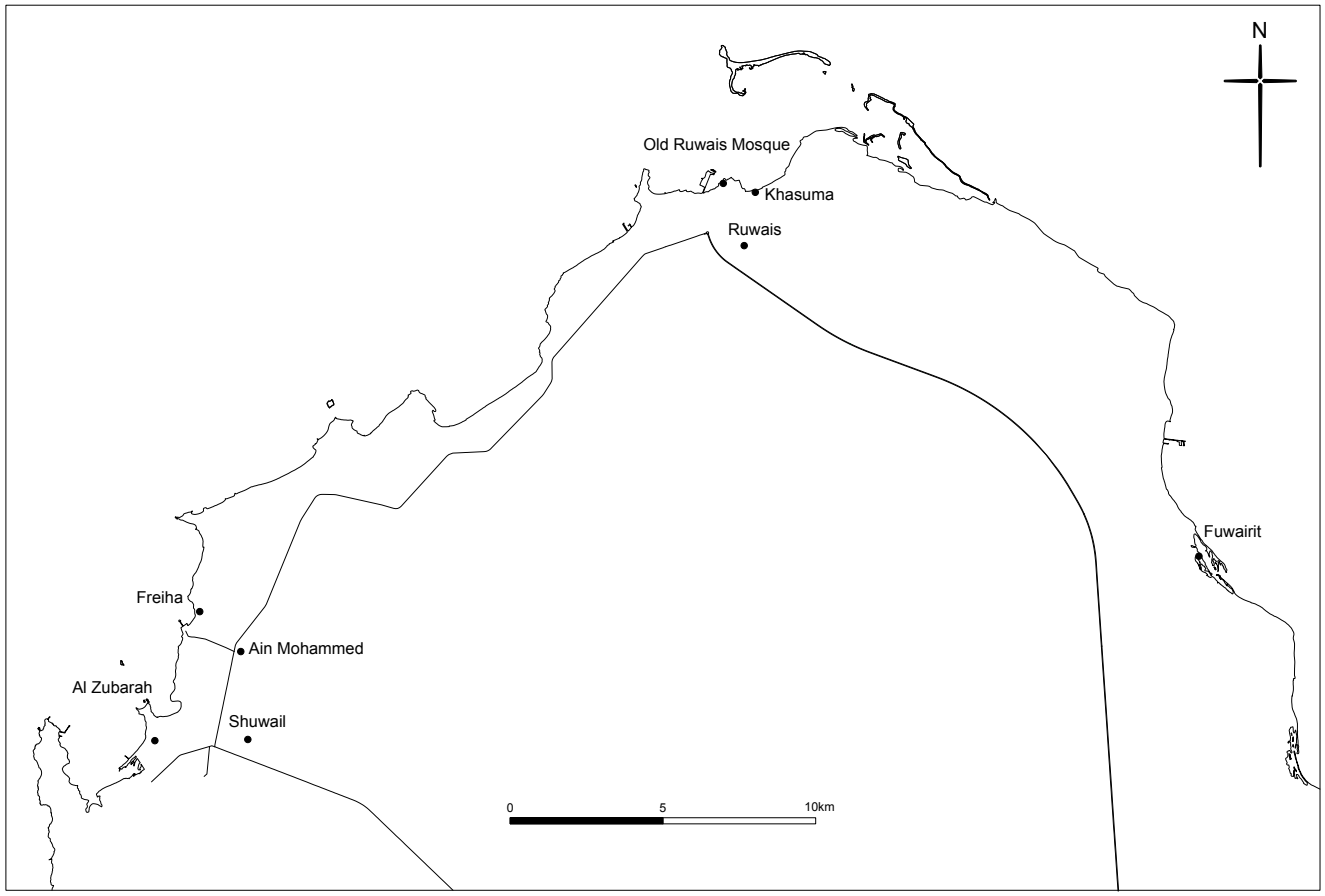



Figure 4.62: Map showing sites referred to in sections 4.3.1-4.3.4

### 4.3.1 Mapping work at Al Zubarah

A ground survey of the remains at Al Zubarah (QNG 181064/469326) and its immediate hinterland was undertaken in 2009 by Richard Hugh Barnes (Figure 4.62). Initially, roughly scaled sketches of the site were drawn followed by a digital survey using a total station.

Each area has one control station established by resection from known existing fixed control points and the level is transferred from the fixed point using an automatic level. During this season previous excavation areas QMA1, QMA2, QMA3 and QMA4 were surveyed to provide wall plans for the conservators. These plans have allowed them to carry out a condition survey for each area. Previous excavation areas, ZUEP01, ZUEP02 and ZUEP04 were extended. A new area ZUEP05 was opened on a midden mound outside the outer city wall south of tower 9. A small sondage was excavated on the higher ground to the north of ZUPE01.

On excavation areas ZUEP01 and ZUEP04 additional control points were established for the laser scanning team to use.

### 4.3.2 Mapping of Shuwail

This site is situated c.1.1km east of Al Zubarah Fort (QNG 184076/469378) and is comprised of a small, ruined fort situated on the higher rocky ground within a large shallow irregularly shaped depression (Figure 4.63). The fort is a square structure with a round tower on its east corner and a rectangular tower on its west corner (Figure 4.64). The building measures c. 20 x 20m, with the entrance on the southeast side and includes two small buildings on the west side and one on the east side. Within the compound there are four rooms along the northwest wall with at least two along the southwest wall. The rectangular tower on the west corner still has remnants of the mud brick architecture surviving on a stone foundation.

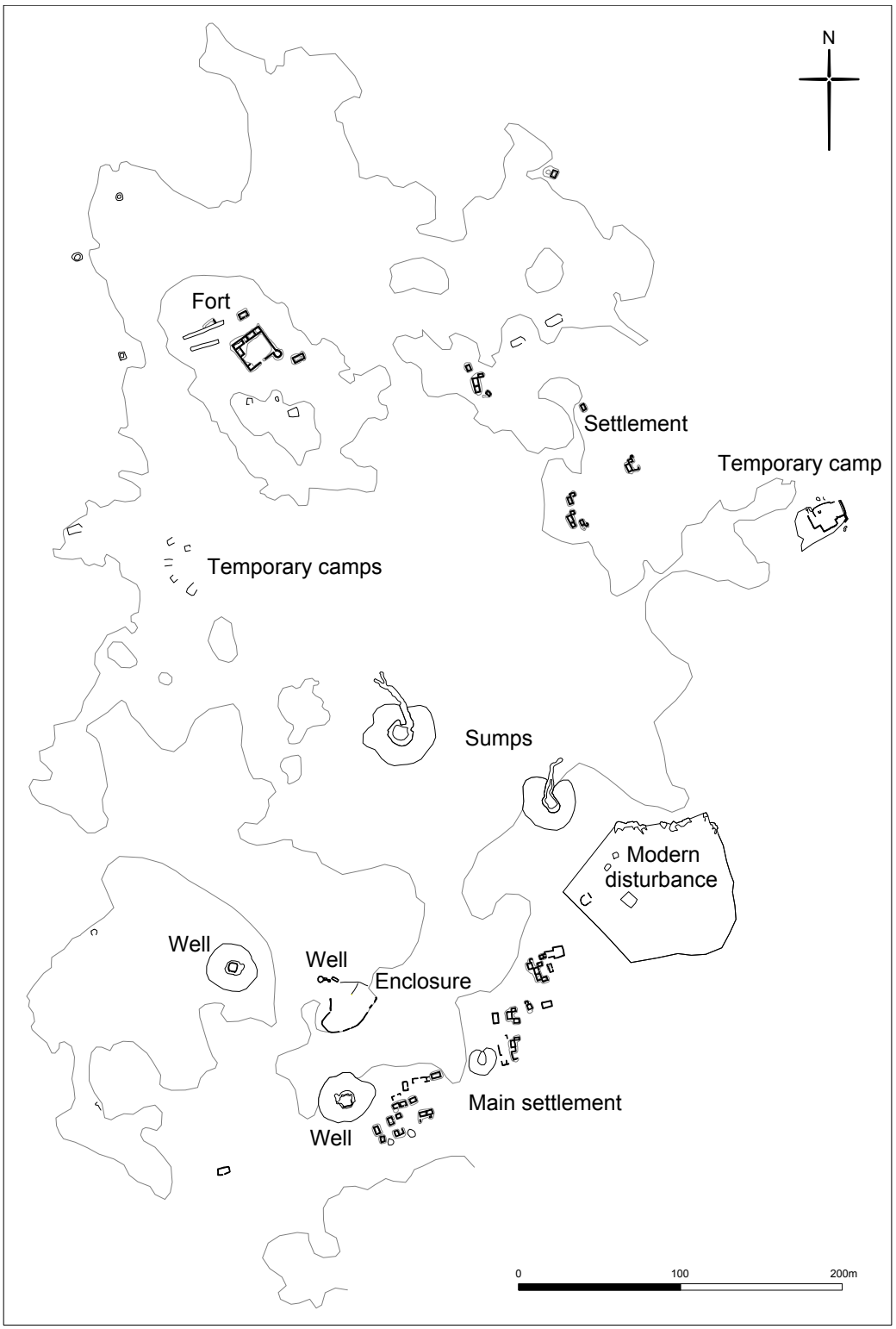



Figure 4.63: Plan of the fort and settlement at Shuwail

Figure 4.64: The fort at Shuwail

This site was previously reported by Beatrice de Cardi in her Qatar Archaeological Report as site '13b Ain Al Shuwail', where she describes an 18th to 19th century fort amid several ruined buildings. Beside the fort is a fine stone lined well 2m in diameter with water at a depth of 5.20m.

Located to the east about 200m close to the edges of the depression are another eight scattered ruined buildings (Figure 4.65). Another building is located on the northern edge of the depression with other possible buildings around the western edge of the depression.

The main settlement consists of twenty two dispersed buildings and is located 478m to the south of the fort close to three stone lined wells. The western well measures 4 x 4m and is surrounded by a circular eroded spoil heap. The central well is circular, approximately 4m in diameter and still contains water at a depth of 5m. It is likely that this is the well described by de Cardi. There is a denuded spoil heap around this well and it has two modern concrete water troughs adjacent to it with the remnants of a stone walled enclosure to the south east. The third well is located 75m to the south east of the central well and measures c. 5 x 5m surrounded by a large spoil heap.

To the north of the settlement and the wells within the depression are two sub circular cuts surrounded by large eroded spoil heaps with small eroded channels running into each. They are both unlined and appear to act as sumps rather than wells collecting and retaining water following rainfalls.

Within and around the edges of the depression are a number of temporary tent positions with one large cleared area to the north east bounded by low stone walls around a sand covered interior with a clay moulded hearth, drainage gullies, and clearance cairns (Figure 4.66). This is relatively recent as are the bulldozed spoil heaps and former tent positions to the south on the edge of the depression. This may be a former position of the existing sheep and goat farm to the west.

Figure 4.65: Ruined buildings at Shuwail

Figure 4.66: Temporary camp at Shuwail

### 4.3.3 Mapping of Ruwais

This site is comprised of two partly collapsed stone walled enclosures and associated wells located north of the Al Shamal sports ground (QNG 200414/485340). (Figure 4.67), Beatrice de Cardi makes no reference to this site in her Qatar Archaeological Report.

The northern enclosure is square in shape and measures c. 64 x 70m. The wall only survives to a height of one to four courses and is between 0.60m and 0.65m in width. Near the south east corner is a stone lined square well with the remains of a building on its northern side, the walls of which survive to a height of 1.23m and are 0.80m thick (Figure 4.68).

The southern enclosure is located c.130m to the south east and is sub square in shape and measures c.53 x 56m (Figure 4.69). The enclosure wall is constructed from large irregular undressed blocks of stone with an internal packing of mud and smaller stones. It is 0.70m in width at the base tapering up to 0.46m wide at the top, and survives in places to a height of 1.07m. Located on the western side is a partially collapsed disused stone lined well. To the northwest outside the enclosure is a small round concrete capped well which has been partially backfilled. Another disused square concrete capped well with a concrete water trough is situated on the north east corner of the enclosure.

Figure 4.67: The Ruwais enclosures with Al Shamal sports ground to the south

Figure 4.68: Northern enclosure at Ruwais

Figure 4.69: Southern enclosure at Ruwais

### 4.3.4 Mapping of Ain Mohammad

The abandoned settlement at Ain Mohammad is situated c. 4km northeast of Al Zubarah town (QNG 183897/472065). The settlement is defined by twenty relatively recent dispersed derelict buildings and a demolished mosque. Amongst these buildings are earlier ruined compounds, buildings and disused wells. Two walled cemeteries are situated to the northeast of the site. The centre of the site is comprised of a sub square walled enclosure with two later extensions to the north and south defined by reused oil drums surrounding a central well with a concrete cistern (Figure 4.70). Located to the northwest of this is a ruined square compound with a round tower on its southeast corner which is similar to the fort at Shuwail to the south (Figure 4.72). To the southeast there is another ruined stone walled compound which has a tower on the northeast corner and the remnants of another possible tower on the southwest corner (Figure 4.71).

To the south of this structure is a collapsed stone lined well associated with a small walled enclosure. To the south west of this enclosure, adjacent to the access road to the military compound, is another concrete capped well and cistern. Another concrete and stone capped well is located to the east.

Located along the eastern edge of the site are nine small ruined structures and former temporary camp positions.

Immediately to the south of the access that gives access to the military compound is another ruined small settlement, comprised of a linear group of collapsed stone buildings and enclosures with one standing building at the north western end. These buildings probably represent the southern extent of the settlement north of the road, but have been truncated by a modern road leading to a military installation further east. Since last year the northern edge of this site has been partially destroyed and covered by spoil excavated from a new service trench. Another two collapsed stone structures are situated to the southeast of this site.

Figure 4.70: Main enclosure, derelict buildings and cemetery at Ain Mohammad

Figure 4.72: Ruined northern compound at Ain Mohammad

Figure 4.71: Photograph of the southern compound at Ain Mohammad

### 4.3.5 Mapping of Fuwairit

*Introduction*

The site of Fuwairit survives as a series of poorly preserved and partially buried low walls. The topography of the site, along with all visible archaeological features was recorded by total station. A detailed digital terrain map of the site was produced, as well as an interpretive site plan and a 3D model of the site. The previously undocumented, fortified site of Zarqa was identified inland of Fuwairit, and would have been the costal site's source of water as well as providing agricultural land. A photographic record of both sites was made, historical references were investigated, and aerial photos examined. The preliminary results of the survey are presented along with recommendations for further work in the area of Fuwairit, and measures to ensure the protection of the archaeological remains.

*Site Location*

The archaeological site of Fuwairit is located on the northeast coast of Qatar, centred on Qatar Nation Grid (QNG) reference 215295 475177 (Figure 4.73). The site is bounded to the north by Jabal Fuwairit and to the east by dense mangrove. Beyond the mangrove is a popular sandy beach, known as Fuwairit beach. To the west the site is bounded by an area of sabkha. The southern extent of the site lies on a sandy peninsula, and is bounded by an area of tidal mudflats and patchy mangrove.

The site of Fuwairit is a little over a kilometre long, with the main area of ruined architecture measuring c.750m long by 160m wide. To the north a wall extends c.500m along the coast to the foot of Jebel Fuwairit, enclosing a tidal area and beach frontage that may have acted as the settlement's harbourage. To the west of the ruined architecture an area of associated midden dumps extend c.175m to the edge of the sabkha. Two walled cemeteries are also located on the edge of the sabkha.

Approximately 500m directly south of the archaeological site of Fuwairit lies the village of Fuwairit, which is largely abandoned with many buildings having fallen down or in an advance state of decay. The village consists of low demolished walls, partially ruined buildings including a mosque, as well as more recently constructed compounds that are still in use.

Inland from Fuwairit c.1.5km the site of Zarqa is centred on QNG 213843 474412. Adjacent to a small farm are the remains of a mosque, fort and a number of other ruined buildings. These represent a fortified site that would have provided the water and agricultural areas utilised by the former inhabitants of Fuwairit.

*Historical background*

Fuwairit is historically poorly documented and not shown on Carsten Niebuhr's 1765 map of the Gulf region. According to oral tradition Fuwairit was the residence of the Al Thani family until they left for Bida in the mid 19th century after tribal conflicts.

Colebrook describes in 1820 "Phoerol" [Fuwairit] as being "to the East of Ras [cape] Reckan, the inhabitants removed to Bahrein, has no Khoor the coast on this side the cape, is bolder and may be approached by vessels within gunshot" (Rahman 2005, 3). A British maritime survey of the Arabian Gulf was conducted between 1820 and 1825, and makes mention that at "Affeeraat [Fuwairit] a few cattle and water may be procured" (Hughes Thomas 1985, 561).

In 1920, Fuwairit is described as a little walled town, with several towers, on the shore of a small khor (US Hydrographical Office 1920, 117) and an aerial photo from 1958 shows the site of old Fuwairit to be abandoned and in ruins. The site was by then replaced by the village of new Fuwairit located directly to the south.

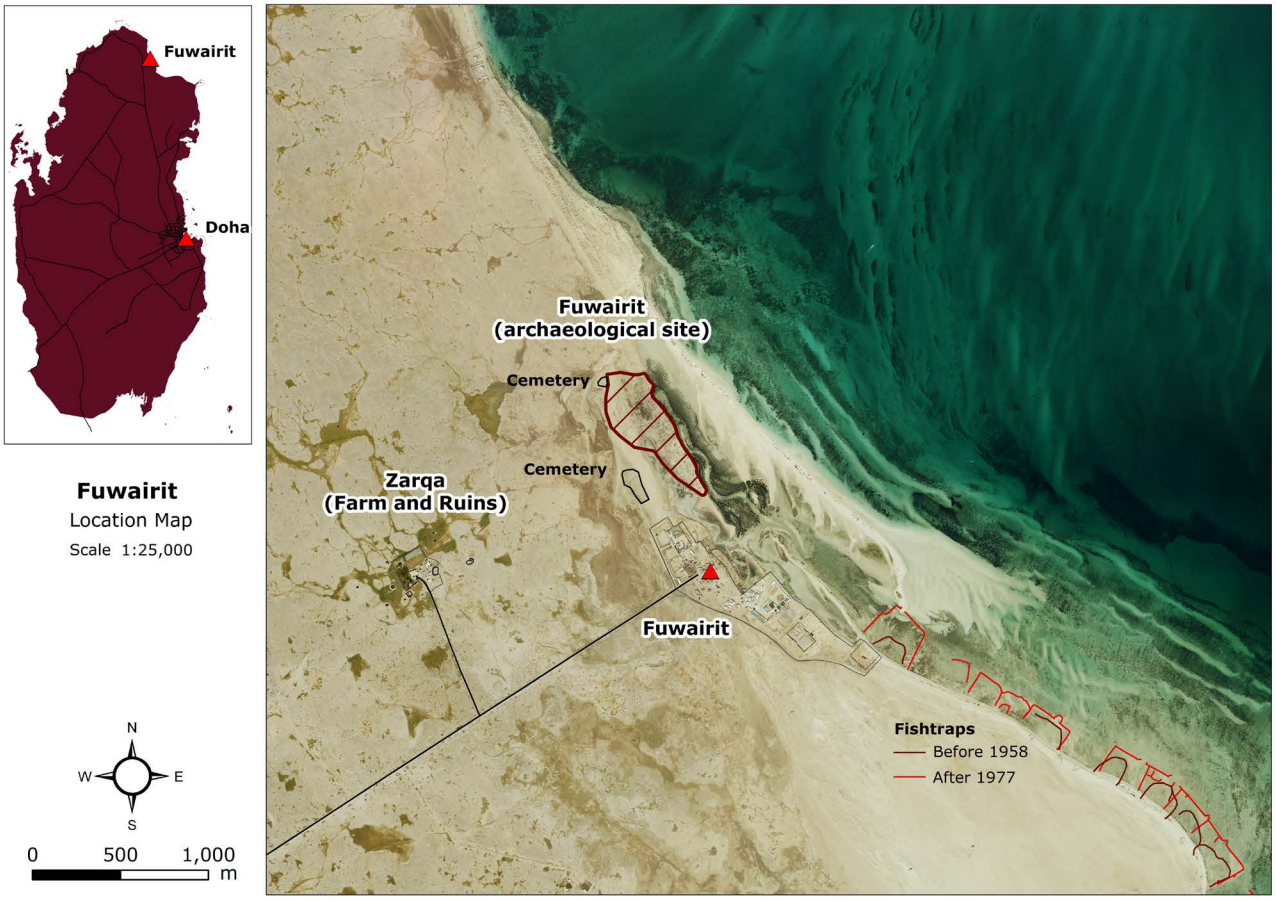



Figure 4.73: Site location

*Previous archaeological work*

The area of Fuwairit was visited by Beatrice de Cardi as part of the British Archaeological Expedition in Qatar, undertaken between November 1973 and January 1974. Although no excavation was undertaken at Fuwairit, a summary of the site is included in the project's gazetteer of finds.

The archaeological site of Fuwairit is described as a "large low site covering about 13 hectare, stands on a spit of sabkha jutting into the sea at the southern end of Jebel Fuwairit. The mound which represents individual houses shows that the town was well planned with building lines running parallel in an area of 860m x 170m. As at Al Zubarah some rubbish middens lay outside the town by the 'fort' and yielded pottery, glass bracelets and porcelain of eighteenth century date" (de Cardi 1978:190).

On Jebel Fuwairit a small scatter of 18th century pottery and a number of rock carvings similar to those on Jebel Jusasiyah was recorded by de Cardi (1978:190). The date and function of the rock carvings was not ascertained, although de Cardi suggests they may have been a gaming board. The carvings on the top of Jebel Fuwairit (QNHER 10627) consist of cupmarks and 'boat' depictions. A similar rosetta of cupmarks was recorded at the base of the Jebel, just north of the northern city wall (QNG 215106 476038).

*Results - Fuwairit*

From the Fuwairit survey data (Figure 4.74) a digital terrain model of the Fuwairit site was produced, this can both be represented as a contour map of the site (Figure 4.75) and used as the basis for an interpretive site plan of the buried architecture (Figure 4.76).

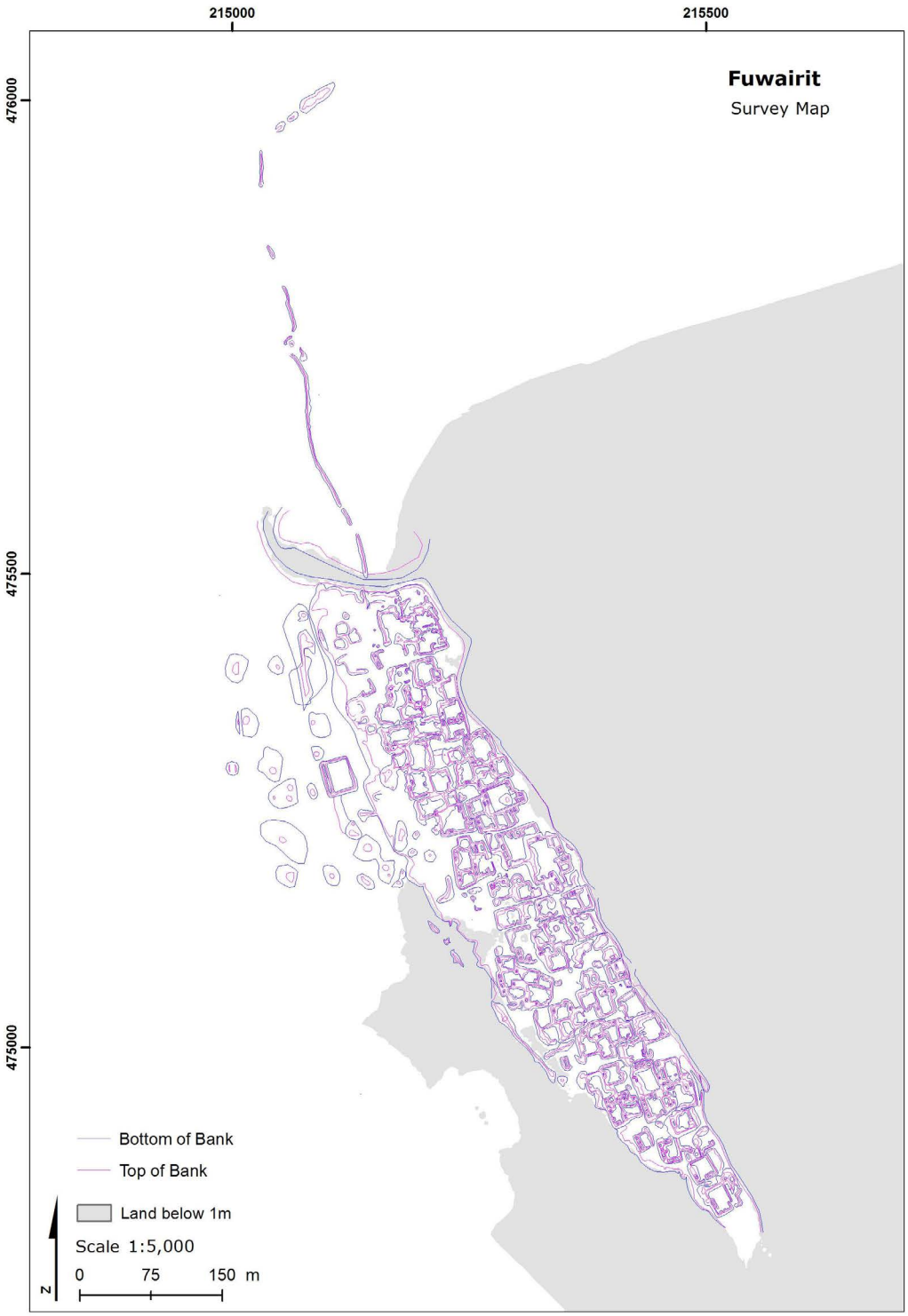



Figure 4.74: Fuwairit survey data

These compounds are rectangular in plan, measuring between c.15m and 40m across. The compounds generally consist of a large central courtyard, surrounded by a number of small rooms, measuring c.3.m to 7m across. The architecture at Fuwairit closely parallels other coastal settlements in northern Qatar, such as those excavated at Al Zubarah and Freiha (Richter 2011). All the structures on the site are built of roughly finished beach rock, which is available within a few hundred metres of the site. Walls are constructed of two parallel rows of stone, sometimes with a packed core of smaller stones.

A possibly defensive wall was recorded as running east-west along the base of Jebel Fuwairit, then turning south and running to a small creek directly north of the main settlement. This wall encloses Fuwairit beach, and may have protected the site's harbourage. The northern extent of the wall is almost entirely buried under sand dunes but appears to be well preserved, surviving to over 1.50m high. At its northeast extent a series of walls abut the southern face of the defensive wall, indicating there are structures directly inside the wall in this area. Possible structures are visible in this area on the 1958 aerial photograph of the site. The northern area has already been adversely impacted on by development, and this is one of the most threatened areas of the settlement.

The main domestic architecture at Fuwairit is located to the south of the creek on a narrow peninsula surrounded by tidal salt flats on all sides. The remnants of a defensive wall can be detected along the western side of the site, the northern extent of which is buried under later midden dumps.

The northern area of the site appears to have the mostly densely packed architecture. In this area the more irregularly shaped compounds may represent infilling between buildings as the settlement expanded. Groups of compounds can be identified, separated by narrow alleyways. The northwest area of the site lacks any obvious walls; however a series of low rectangular depressions may be the remains of more ephemeral wooden structures on the edge of the site.

An intriguing structure is located some distance to the west of the main area of architecture. Measuring 34.m by 28.50m, the building is constructed of beach rock in a similar manner to the rest of the site. However, the plan of the structure, with a double western wall, is clearly different from the domestic compounds seen across the rest of the site. This building is presumably the structure de Cardi identified as a 'fort' (1978:190) in her survey of the site. The building has midden material dumped against the outside of it, as de Cardi described. The plan of the structure does not suggest it is a fort, but probably a mosque. Its location with respect to the settlement would mirror that of some other mosques in villages in northern Qatar. As in Fuwarit, the mosques at Freiha and al-Ghuwair, for example, are the westernmost buildings in the settlements.

The central area of the site contains further domestic compounds, one of which is distinctly larger than the surrounding structures. It consists of two large courtyards that measure over 40m across, and ruined walls survive to almost 2 m high. This structure may also represent a domestic building; however, it is the largest compound on the site, and may have originally stood at least two stories high. This likely represents a fortified compound or fort within the settlement, which would have presumably been an important building.

A more open area in the centre of the site represents a marked change from the closely packed domestic architecture seen across other parts of Fuwairit. A series of alleyways lead into this area, and the poorly preserved remains of smaller structures are visible on the surface. It is likely this represents a suq area, an interpretation that is supported by the presence of rows of small rooms, possibly shops, visible on the 1958 aerial photograph of the site.

The southern area of the site also contains compounds, but they are less tightly packed, and appear to show less addition and alteration. The southern area of the site also has more midden dumping visible within the compounds, suggesting that this area may have fallen out of use earlier in the site history. Large mounds of midden material are also present along the western side of the site, extending out to the sabkha.

Several fish traps are visible directly to the south of the site (Figure 4.73). The early aerial photography suggests some of these are relatively recent constructions, dating to the last quarter of the 20th century. However, some are visible on the earliest aerial photography of the site and may be associated with earlier occupation at Fuwairit.

*Results - Zarqa*

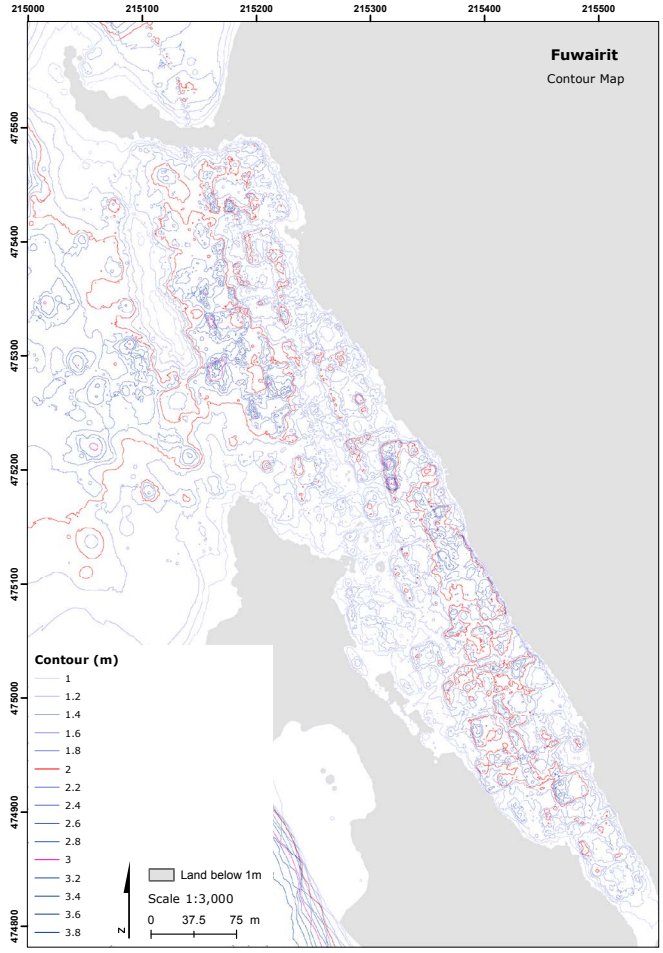



Figure 4.75: Fuwairit contour map

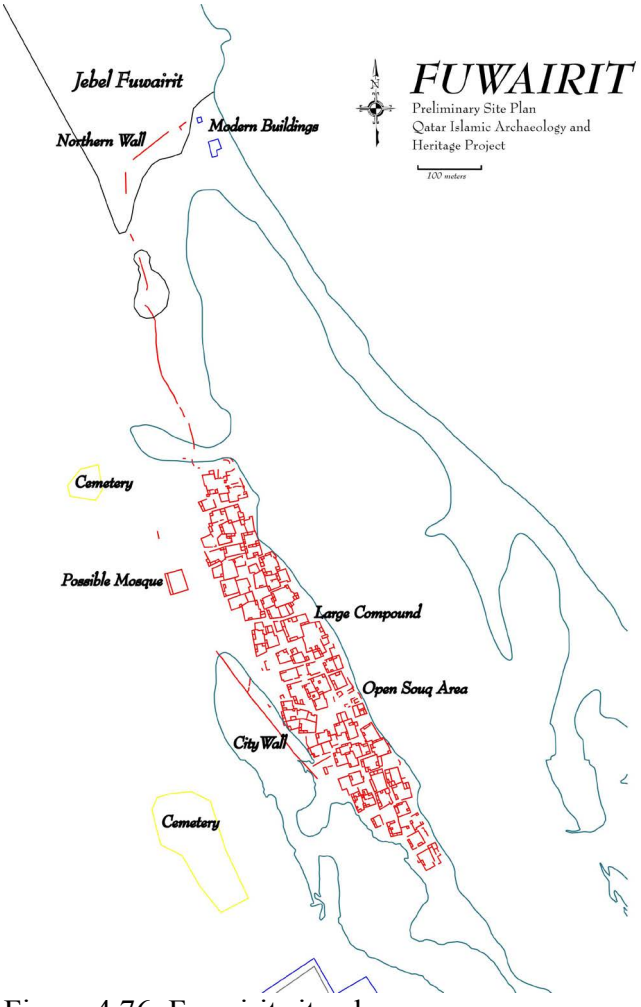



Figure 4.76: Fuwairit site plan

About1.5km inland to the west of Fuwarit, the site of Zarqa was identified, centred on QNG 213843 474412 (Figure 4.77). Adjacent to a small farm are a number of ruined buildings, representing a fortified site that may have provided the water and agricultural areas utilised by the inhabitants of Fuwairit. The QNHER lists one of these buildings (QNHER 10167) and the cemetery (QNHER 1068); however the site is incorrectly recorded as Feleeha.

The structures at Zarqa are built of unworked sub-angular pieces of limestone, a building material abundant nearby. The remains of a fort survive as a large mound of stone, measuring 26m across and 1.80m high, with deflated walls clearly visible on the surface. The fort is rectangular in plan, with a tower on each of its four corners. The fort, like all the structures on the site, has been heavily impacted by modern inhabitants. The southeast tower of the fort has already been largely destroyed by a mechanical excavator, as has part of the northern wall; it appears that the fort has been used as a convenient source of stone building material. In addition the western side of the fort is partially covered by modern dumps of building activities.

To the northwest of the fort a rectangular building measures 13m by 15m in plan. This structure is the only building on the site in which beach stone as well as limestone was utilised in construction. The building is divided roughly in half, and consists of an open courtyard to the east and a slightly smaller rectangular room to the west. The orientation and layout of this structure strongly suggest that it is a mosque. Similar to the fort this mosque is unprotected and is highly vulnerable to further disturbance.

There are a series of small buildings, measuring between 5m and 10m long, in the area to the south and west of the modern farm. These are all constructed of unworked limestone, and their function is not clear. Given the size of the fort and mosque there are relatively few other structures present, possibly suggesting much of the site was constructed of perishable material such as wood, or that the site was not intensively occupied and that the main bulk of the population in the area lived at Fuwairit. The original size of the site is also indicated by the presence of a cemetery measuring c.30m in diameter. The cemetery has been protected by a mound of dirt that has been pushed up to it by a mechanical excavator.

It is likely that the primary function of the Zarqa site would have been to provide water and ag-

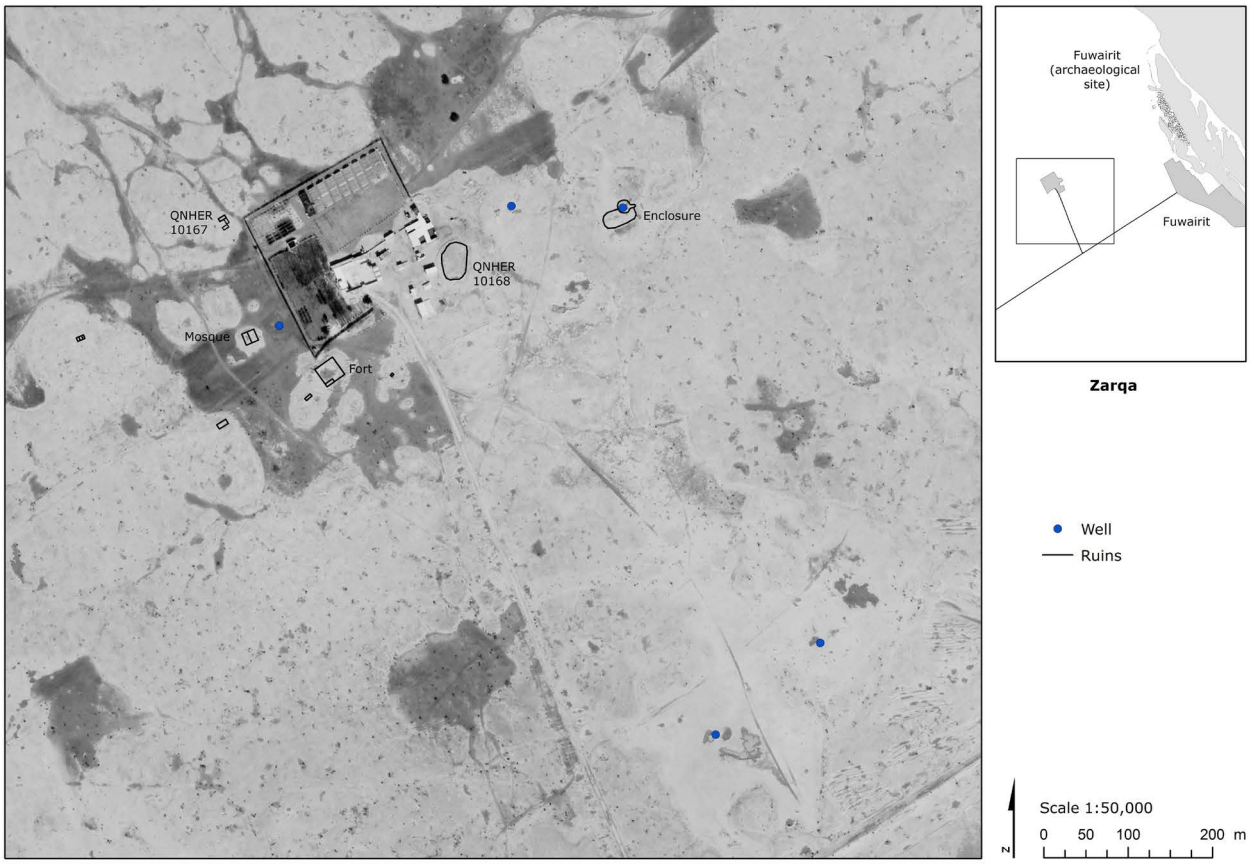



Figure 4.77: Zarqa Site Plan

*Results - New Fuwairit*

To the south of the archaeological site of Fuwairit the village of new Fuwairit is also largely in ruins (Figure 4.78). Constructed in the mid 20th century, it is not entirely clear if the site was ever entirely abandoned. Ruined walls of beach stone constructed compounds appear to be very similar to those surveyed to the north, and a contemporary date cannot cannot be ruled out.

Most of the buildings in new Fuwairit are constructed using a mixture of beach rock and cinder blocks (Figure 4.79). The buildings are roofed with a combination of wood, palm fronds and packed mud. The construction techniques observed here are likely to have direct parallels in the ruins of the earlier settlement.

Figure 4.78: Ruined compounds (foreground) in New Fuwairit looking southeast

Figure 4.79: Cinder block and beach rock construction

*Surface Finds*

A detailed, systematic surface collection of artefacts was not conducted at Fuwairit. Given the degree of midden dumping, modern activity and disturbance on the site it is unlikely that the surface distribution of artefacts accurately represents previous activity areas at the site. However, during the survey a number of surface finds that were in danger of being damaged or that could give strong dating evidence were collected. The locations of all the artefacts collected were recorded in three dimensions using a total station. In addition a brief overview of the surface pottery was undertaken, with the help of QIAH pottery expert, Agnieszka Bystron.

*Surface pottery*

Surface pottery observed on the Fuwairit site included bowls with manganese painted decoration and a yellow glaze of 16th to late 19th century date. Iranian Khunj wear bowls were present, with a similar date range. Chinese blue on white porcelain were present on the surface. In addition poor quality blue on white wear ware was noted, with crazed and blistered glaze, probably representing low quality local imitations of Chinese ceramics. One single sherd of block printed blue on white glazed porcelain dates to the 19th century. European semi porcelain from the site, of probable Dutch or English manufacture, dates to the late 18th or 19th century. Fragments of green glazed bowls were collected, although no diagnostic sherds were found. Large reduced wear ware vessels probably represent Julfar wearware, and date to the late 16th to 19th century. Collectively the surface pottery at Fuwairit appears to be very similar to the assemblages from the excavations at Zubarah and Freiha. Most of the surface pottery examined has a broad date range from the 16th century until the 19th century. However, certain pieces such as the European semi-porcelain suggest a later 18th or 19th century occupation. Surface pottery at Zarqa was significantly less common, reflecting the sparse and more spread out architecture. Here the surface pottery included sandy creamy wears wares and coarse tempered red brown domestic pottery.

*Small finds*

The surface finds from Fuwairit included several small, heavily corroded coins. In addition there were two more easily identified coins. An Indian Rupee dating to 1917 (SF4, Figure 4.80) and Chinese coin with a small square hole in the centre (SF9, Figure 4.81). A small padlock (SF7) has writing on one side of it, and will probably be able to be dated once it is fully cleaned. Two cartridge cases (SF8) appear to have been utilised as a stamp tool. One end of the casing has been shaped into a square pattern and may have been used to stamp decoration into the wet render on the buildings. Two stone artefacts were recovered from the surface of the site, both attesting to the importance of maritime activity. A small stone weight probably represents a net sinker; a fragment of a larger stone artefact with a hole through it is part of an anchor.

Figure 4.80: 1917 Rupee

Figure 4.81: Chinese coin

*Conclusions and Recommendations*

Maritime connections were essential to the inhabitants of the Qatar peninsula in the early modern period. The site of Fuwairit gave maritime access as well as being relatively defensible. This latter attribute was an essential requirement during a period when tribal rivalries in the region often resulted in violent conflict. The site of Fuwairit lacks on-site fresh water, and this need was met by the complimentary site of Zarqa. Located a short distance inland this site provided water and agricultural land to those living on the coast.

Both Fuwairit and Zarqa are threatened by development and damage from vehicular traffic, which are causing tangible losses on both sites. At Fuwairit the main site has been badly damaged by heavy vehicle traffic, in part due to its proximity to the popular recreation area of Fuwairit Beach. A modern structure on the northeast corner of the site has destroyed archaeological deposits, and the possibility of continued development of the beach would result in further losses. The site of Zarqa has been partially destroyed, either for the deliberate recovery of stone, or out of a lack of knowledge of its history and importance. The full extent of the site is unknown, due to the proximity of a modern farm.

In conclusion, the survey conducted in the Fuwairit area provides a basis from which to expand research of this region. Further research would include a survey of Zarqa, building recording at new New Fuwairit, and a series of excavations at the archaeological site of Fuwairit. The excavation and survey data from Fuwairit, along with oral histories would complement the ongoing research undertaken by the QIAH project in northern Qatar. The exploration and preservation of this area is important to understanding major social and political shifts in the recent history of Qatar and of the region. Excavation at Fuwairit would also allow the cultural heritage of the site to be presented to the public in situ, and allow future development of Fuwairit beach as an integrated recreational, cultural and environmental area.

### 4.3.6 Survey of the coastline between Fuwairit and Ras Laffan

*Introduction*

The coastal area of northeast Qatar, between Fuwairit and Ras Laffan industrial city, was examined in detail as part of QIAH's regional survey (figure 4.82). Aerial photographs, Google Earth satellite imagery as well as data from surveys conducted by the British Archaeological Expedition in Qatar (de Cardi 1978) and Birmingham University (Beardmore et al. 2010) was utilised to locate archaeological sites in the area. The sites of Al Marrouna and Al Huwailah were mapped for the first time. An archaeological site at Al Jethay was recorded directly inland from Al Marrouna. Two smaller coastal sites were identified between Al Marrouna and Al Huwailah. This report presents a brief summary of the nature and location of these sites, as well as recommendations for their protection. All the sites identified were threatened with destruction, or had been adversely impacted on by recent development.

Figure 4.82: Location of the site discussed below

*Al Marrouna (QNG 218328 470988)*

According to Brucks 1829 (in Hughes Thomas 1985, 561) a settlement called Ras-ool-Maroona was at "lat. 26° o' 50" N., and long. 51° 27' 40" E", clearly situated between al Huwailah and Fuwairit; however the author gives no further details of the site.

De Cardi mentions a site "five kilometres south of Fuwairit some buildings, very heavily sanded up, lie parallel to the coast just behind the beach. Mortared wall lines of large courtyarded houses stand up to 2.50m high. The site is very unusual in that the stone masonry is bonded with good lime mortar. No pottery was visible, but the site may be of eighteenth century date" (1978, 190).

The site of Al Marrouna has received little attention, in part no doubt due to the brief nature of the documentary references mentioned above. However, the remains of Al Marrouna were identified during the 2011 survey and found to consist of a substantial settlement, centred on QNG 218328 470988.

The archaeological site of Al Marrouna consists of a series of substantial walls constructed of beach rock, measuring 0.40-0.50m wide and possibly surviving up to 2m high. The site lies parallel to the coastline, and represents the remains of a relatively large settlement. The site has been partially destroyed by the construction of modern buildings (Figure 4.83). The surviving area of walls visible on the surface measures approximately 330m north-south and 150m east-west, but originally the site would have extended further to both the north and south. Recent development of the site has resulted in a significant proportion of the site being destroyed. The surviving areas of the site are threatened with imminent destruction, unless urgent measures to preserve them are undertaken.

The site is currently covered with low sand dunes, and rapid inundation by sand appears to have resulted in the structures on the site being unusually well preserved. Since the site is largely buried under sand it is difficult to identify from satellite imagery, and as a result it does not currently appear to be listed on the Qatar National Historic Environment Register (QNHER). The site contains a number of rectangular domestic compounds, consisting of central courtyards surrounded by smaller rooms. This architecture is typical of the 17th-19th century villages of the region, a date supported by the pottery sherds visible on the surface. In addition to the walls visible on the surface it is likely that midden dumps, possibly along with more ephemeral structures, extend to the west and are completely buried under the sand (Figure 4.84).

The unusual white mortar that caught de Cardi's attention is visible on the exterior faces of many of the walls on the site. This "lime mortar" is in fact more likely to be dehydrated anhydrite (Ca SO4), which occurs when gypsum is naturally dehydrated by being baked in the sun (Macumber pers. comm.; see also Macumber 2009: 18).

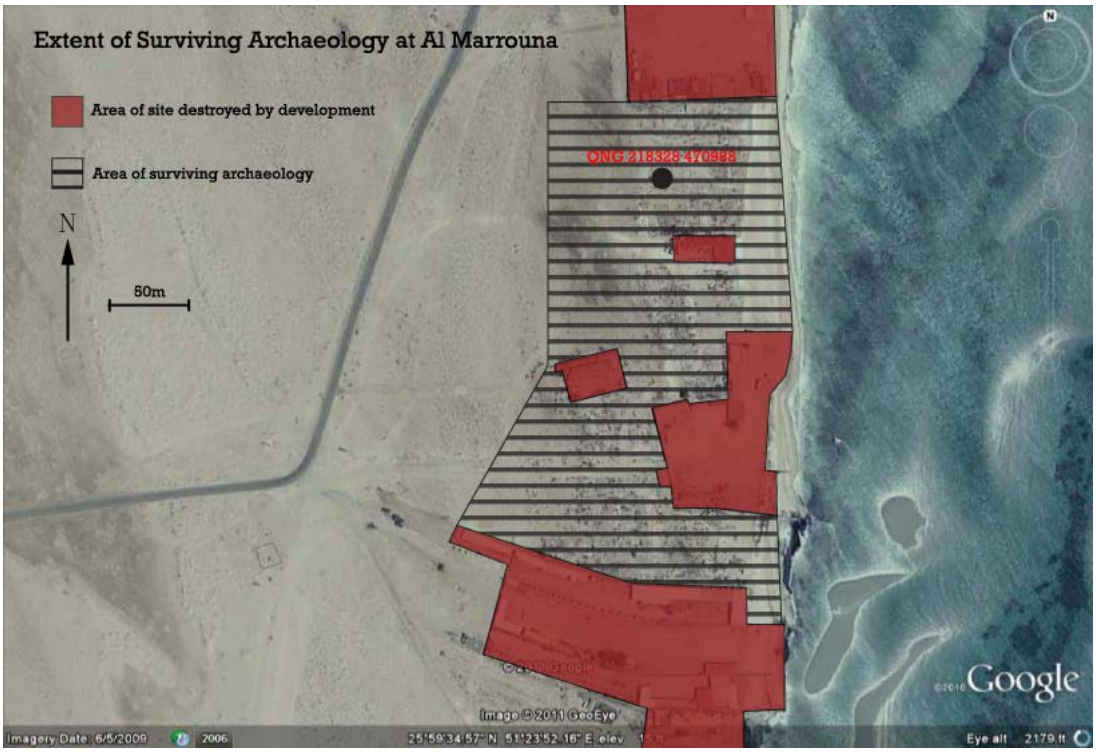



Figure 4.83: Extent of surviving archaeology at Al Marrouna

Figure 4.84: The site of Al Marrouna looking south

*Al Jethay (QNG 217340 470482)*

Approximately one kilometre inland from the coastal site of Al Marrouna is an area of earthworks and low buried walls, centred on QNG 217340 470482. This represents a second settlement, which would have presumably provided water and agricultural land to the coastal site of Al Marrouna. This pairing of coastal settlements and inland well sites is a pattern seen along the northern coastline of Qatar; for example the sites of Fuwairit and Zarqa directly to the north or Al Zubara and Murayr on the northwest coast. It is likely that the archaeological remains at al-Jethay are contemporary with Al Marrouna, and date broadly to the 17th to 19th century.

The site of Al Jethay was recorded from aerial imagery (Figure 4.85) as QNHER 10263; "a large area of former structures visible as earthworks, unknown date, with modern development occurring around and on top. Alignment appears to respect sabkha-former coastline." However, the site appears to have been wrongly referred to as "Al Maroona" in the QNHER.

The structural remains cover an area of at least 200m by 150m. It is unclear from the brief examination of the site undertaken whether the remains represent domestic buildings, agricultural enclosures, or a combination of both. There is no immediate evidence of any defensive structures. While there is no evidence for backfilled in wells on the site the modern building constructed on the southern area of the remains has a functioning well. A large farm c.400m to the west also has access to water through wells.

As well as the ruined remains of the earlier occupation at Al Jethay, there are the standing remains of buildings, representing 20th century occupation (Figure 4.86). In addition there are modern structures on the site and to the west that are still in use.

*Building and possible cemetery (QNG 218587 467351)*

Between the sites of Al Marrouna and Al Huwailah is a large, gently curving bay, with a shallow reef extending some distance from the shoreline. Along this stretch of coastline two sites were identified, both consisting of the buried remains of what appear to be isolated structures.

Located approximately 450m inland, centred on QNG 218587 467351, a low mound measured 35.m across and survived to c.1.m high. Blocks of beach rock on top of the mound appear to be associated with a buried building. The mound and the area surrounding were covered with a relatively high concentration of pottery sherds. Many of the sherds were of 18th-19th century date; however, a sherd with fragments of turquoise glaze may suggest earlier activity.

In addition to these remains a second mound located c.100m to the east, centred on QNG 218686 467383, may represent a cemetery. The flat-topped mound measured 50m by 24m and c.1m high. Although poorly preserved, these deflated mounds of stone may have once been burial cairns. If this is a cemetery it suggests there may have been a larger settlement at this location at some point in the past.

*Building (QNG 222382 465495)*

Four kilometres to the east, at the other end of the bay, a second similar mound was centred on QNG 222382 465495. Located approximately 400m inland the mound measured c.20.m in diameter. Beach rock walls were visible on the surface, and the building was surrounded by a dense concentration of pottery sherds.

This site probably represents the remains of a building, with significant activity occurring in the immediate vicinity. The pottery suggests an occupation in the 18th-19th century. The function of the structure is unclear; although it is possible it was a watchtower, a small defensive structure, or merely a more mundane isolated domestic building

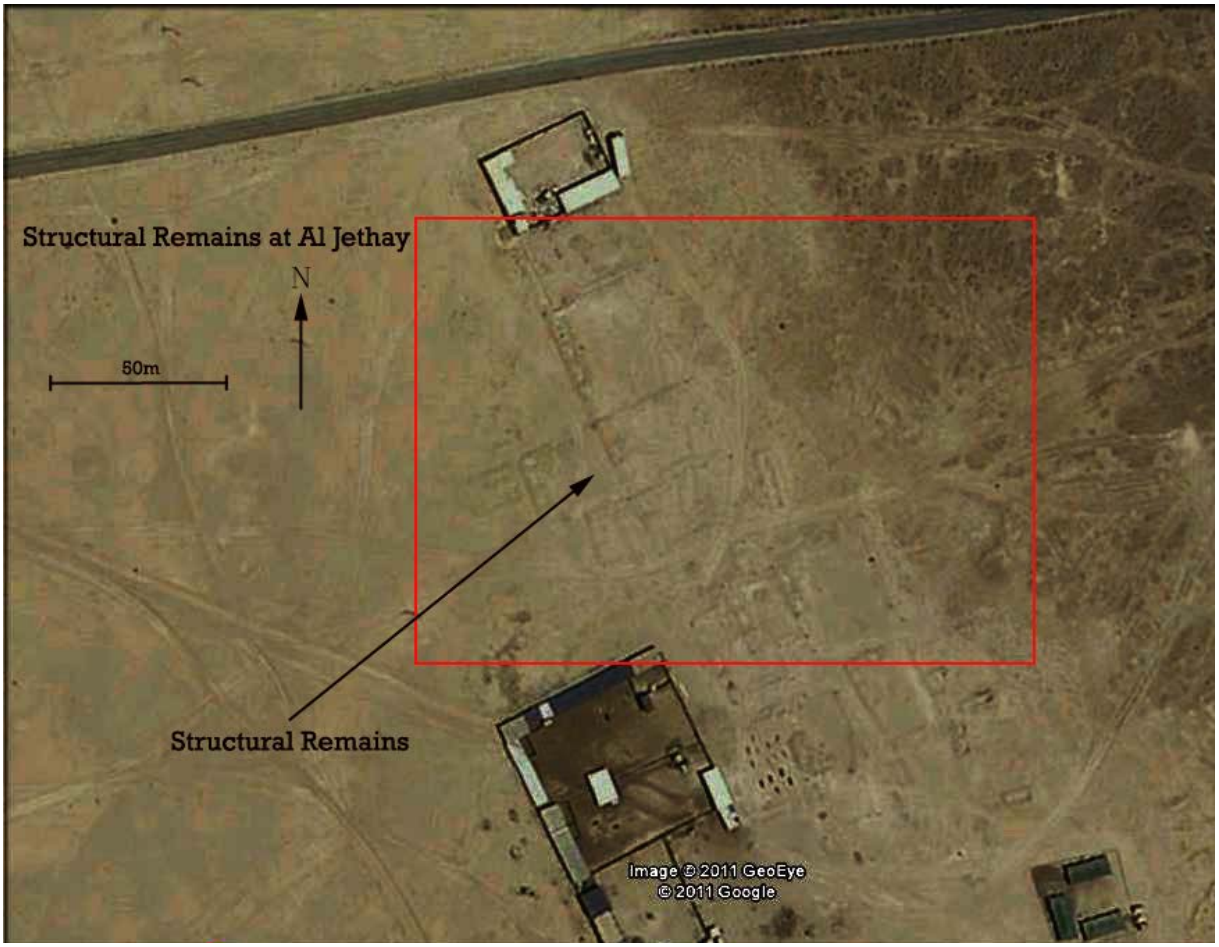



Figure 4.85: Satellite image of the structural remains at Al Jethay

Figure 4.86: Later structures at Al Jethay and earlier buried walls in the foreground

## *Al-Huwailah (QNG 224167 465677)*

### *Historical background*

In Major Colebrook's Report on the Persian Gulf littoral of 10 September 1820 Al Huwailah is described as being "defended by a square Ghurry, containing good water, and is frequented by fishermen in the season. It was inhabited by a remnant of the once powerful tribe of Musellim (al-Musallam), now incorporated with the Utubis." (Rahman 2005:3-4).

According to Brucks "Al Owhale (Huwailah) is a town…defended by a small square Ghuree, and is the principle place on the coast. It is inhabited by about four hundred and fifty of the Abookara tribe…It has few boats belonging to it, contains water, and has some supplies of cattle. The people are mostly employed as fishermen, or in coasting trade. This is one of the principle stations during the pearl fishery season" (Hughes Thomas 1985:560).

A century later a US navy survey of the coast of the Qatar peninsula reported on the same site. While the fort still stood to a considerable height, the site appears to have been abandoned. "Al Howeila (Huwailah), 6 miles northwest of Ras Laffan, is a small town, with a square fort some 30 feet high. Westward of the town is a small bay. The people were formally pearl fishers, but in 1887 the place was found deserted" (US Hydrographical Office 1920, 117).

### *Previous Archaeological Investigations*

In 1973 Al-Huwailah was the subject of a two-day investigation by a team of archaeologists led by Beatrice de Cardi. The survey consisted of an aerial survey by helicopter, a brief walk-over of the site, and systematic pottery collections (Garlake 1978). The site was found to contain the stone-built foundations of "perhaps ten or twelve complexes, each consisting of four or five small separate rectangular rooms, grouped round compounds and not adjoining" (Garlake 1978, 173). A series of low earthworks formed a rectangle and "seems to reflect a rectilinear planning system, the buildings of which have now completely disappeared, or at least any remains of which are entirely covered in sand" (Garlake 1978, 173). These possible remnants of earlier occupation were covered by the town middens, measuring up to two meters high with "surfaces of wind-blown sand strewn with great numbers of potsherds and glistening from an abundance of oyster shells" (Garlake 1978, 173). The ceramics collected appeared to be "typical of an eighteenth-century trading centre of the Gulf" (Garlake 1978, 178).

In 1977 and 1978, the French Mission in Qatar conducted limited excavations at Al Huwailah, overseen by Claire Hardy-Guilbert and under the director Jacques Tixier. The excavations recorded a 32m by 32m rectangular fort with corner towers. The interior of the fort was comprised of a group of small rooms built adjacent to the exterior walls, with a central rectangular building. The walls were made of "quarry limestone and white coral stone or seastone, bound together with mortar" and "smeared with thick rosy-coloured plaster" while the floors were made of "lime-rich plaster" (Hardy-Guilbert 1980, 186). The pottery recovered from the excavation suggested a mid-19th century occupation at the fort. However, beneath the layers associated with the fort an ash layer contained glazed pottery that may have been of Iranian origin was found, thought to date to the 14th century.

### *Al Huwailah Today*

Despite its position as the most important settlement in Qatar in the 18th century, and being the subject of two separate archaeological investigations, the location of the site of Al Huwailah had been forgotten over the last three decades. Although the site appears on numerous maps of the region, none are detailed enough to provide more than a generalised location. The QNHER has an entry for Lehwaila (10431) at QNG 221427 465904, however examination of this site showed it to be a modern structure.

De Cardi describes the location of the site as "an open and largely featureless stretch of shore on the north-east coast of Qatar. The coastline in this area, of which al-Huwailah is at the centre, faces due north, the only substantial part of the Qatar shoreline to do so. It is entirely unbroken, shallow shelving, sand beach unprotected by bays, headlands or fringing reefs …The visible remains of the town lie 400m. back from the shore on a bar or low ridge of sand that rises very slightly to a maximum height of 4m between the coast and extensive sabkha depressions running parallel to the coast and 2-3km behind it" (Garlake 1978: 180).

Early aerial photographs of the site (Garlake 1978: Plate XXIX; Hardy-Guilbert 1980: Fig.60) show the size of the site with well preserved buildings; however, they show no easily recognisable landmarks. These aerial photographs do show the coastal road curving inland to pass to the west of the fort at this point. Despite the construction of numerous new roads in this area over the last decade, the line of the old coastal road is still visible, and can be roughly aligned with these photographs. This location, at the very eastern end of the large bay described above, corresponds with more detailed map locations for the site.

From the descriptions of the location of the site, and the images described above the site of al Huwailah was successfully located at QNG 224167 465677. Sadly little of the site survives, having largely been destroyed by development over the past decade (Figure 4.87).

There is no longer any visible architecture remaining at Al Huwailah. The town and the fort were presumably destroyed by the construction of the large mosque and the mosque's parking lot. The parking lot does not appear on the 2009 Google earth satellite imagery of the site, and this area appears to have been destroyed in the last two years. A pile of beach rock and pottery sherds to the west of the mosque attest to the destruction of this part of the site.

The western extent of the site has been heavily disturbed by mechanical excavators, and it seems unlikely any archaeological remains survive. A very large mound has been constructed on the eastern side of the site, which presumably has a military function (Figure 4.88). The construction of this feature has disturbed much of the site, and machine tracks radiating from the mound are clearly visible on the 2006 Google Earth satellite imagery of the area. In addition two small modern structures have been built on the southern edge of the site.

The central area of the site appears to be the least disturbed, and in this area the ground is covered with a dense scatter of 18th and 19th century pottery. A series of low mounds in this area of the site may be the earthworks recorded by Garlake (1978, 173). These earthworks were likely to be associated with an earlier phase of occupation, possibly the associated with the 14th century deposits recorded below the fort (Hardy-Guilbert 1980: 186).

*Ras Laffan*

Directly to the east of Al Huwailah, Ras Laffan industrial city covers an area of roughly 8.5 km by 12 km. Access to the site is restricted, and no survey was conducted in this area. The intensive development of this area implies that any archaeological remains are unlikely to have survived. No evidence of archaeological remains are visible on the satellite imagery from the area of Ras Laffan industrial city.

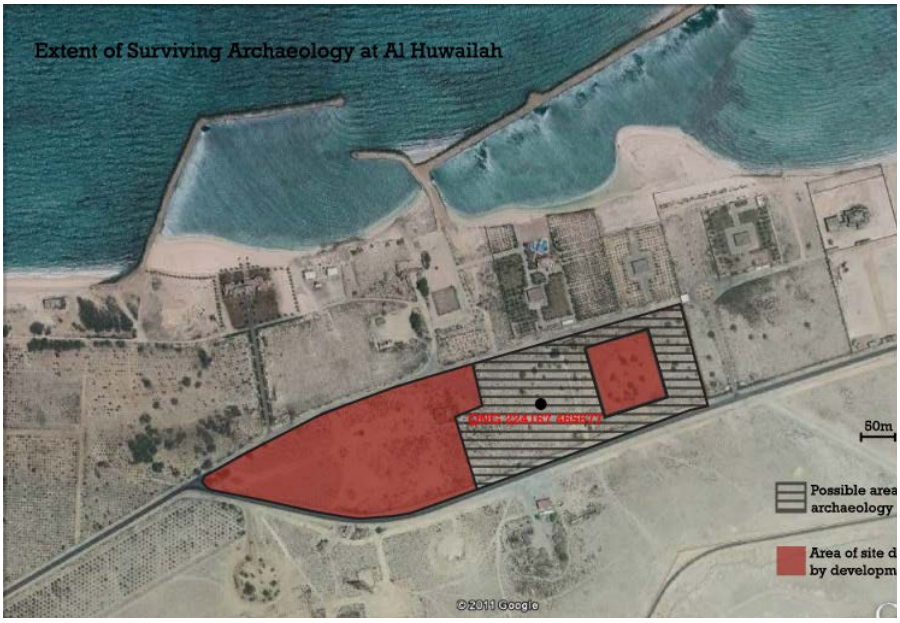



Figure 4.87: Extent of surviving archaeology at Huwailah

Figure 4.88: Al-Huwailah looking east

*Conclusions and Recommendations*

Several sites identified along the area of coastline between Fuwairit and Ras Laffan were examined, helping to build a more complete picture of the Qatar peninsula in the later Islamic period. All the sites identified have been adversely affected by recent development, or are imminently threatened with destruction.

Despite its historical and archaeological importance, Al Huwailah has been virtually destroyed over the last century, coming to near total obliteration in the last decade. Walls of the fort that stood almost 10m high in the early 20th century were reduced to a height of two meters by the 1970s and now are nearly invisible. Further rapid and unchecked development of the Qatari coastline may pose similar dangers for other sites in the area.

The sites of Al Marrouna, Al Jethay and Al Huwailah all require protection from further development. Any further development or construction on the sites should be halted. Land ownership needs to be ascertained to ensure the protection of these sites. Where appropriate the sites should be securely fenced and signposted. The isolated structures identified at QNG 218587 467351 and QNG 222382 465495 should also, at the very least, be clearly signposted as historic monuments.

At Al Huwailah an area of archaeological deposits measuring c.175m x 175m possibly survives in the centre of the site (see Figure 4.94). A detailed surface survey, including systematic pottery collection should be undertaken. Limited test pit excavation would allow the remains to be better evaluated. The aims of this work would be to assess the level of archaeological preservation, and the nature of the archaeological deposits present. It seems likely from the previous archaeological work undertaken on the site that it was occupied as early as the 14th century. If these early deposits survive they are of national significance, and would contribute greatly to the Islamic history of the region.

The sites of Al Jethay and Al Marrouna should both be surveyed in detail. A great deal of the site plan is visible on the surface, and much information could be gained in this manner. Limited surface collections of pottery would allow the more secure dating of these sites.

### 4.3.7 Survey and Rescue Excavations at Ruwais/Khasumah

*Introduction*

A program of archaeological assessment and excavation was conducted at the site of Khasumah near Ruwais in northern Qatar. The site consists of a series of substantial midden dumps, significant quantities of pottery as well as masonry walls. The site is threatened by the expansion of the town of Ruwais.

Three test pits were excavated through three separate midden dumps on the site. Additionally, two areas measuring c. 4.00m by 4.00m were scraped in an area where masonry could be seen on the surface. Finally a brief walkover survey was conducted of the area to the south of the site. The test pits revealed a complex sequence of pottery-rich midden deposits, sealing earlier pits and wooden post-built structures. The area of the site that was scraped back revealed substantial walls belonging to a large building. This structure was built of roughly finished beach rock (faroush) and limestone blocks, with walls measuring up to 0.60m thick.

Directly inland of the site several deflated stone cairns were recorded and worked lithics were recovered.

*Site Location*

The site of Khasumah is located on the northern Qatar coast, approximately 0.5 km east of the present day town of Ruwais. The site measures at least 350m east - west and 100m north - south, running parallel to the present day coastline. The site consists of a series of substantial midden dumps, measuring up to 50m in diameter and surviving to 1.50m high. Significant quantities of pottery and masonry walls are visible on the surface.

The coastline consists of a sandy beach above a wave cut platform of beach rock. To the east a number of large fish traps are visible. A modern house and walled compound occupies the eastern end of the site. To the east of the walled compound a fence line encloses an area of undulating ground. To the southeast, approximately 300m from the site is a walled cemetery. The area to the south and to the west of the site is being developed as residential units; a series of concrete property markers across the site indicates that this development will engulf Khasūmah (Figure 4.89). To the south of the site an area of sabkha extends for c.800m, before rising several metres to a low stony raised beach, representing a relic early Holocene shoreline.

*Research Background*

Beatrice de Cardi visited Ruwais in the early 1970s and describes a site with masonry buildings and middens in the area of Ruwais/Khasumah. She believed the site to be occupied from at least the thirteenth century.

“About half a kilometre to the east of Ruwais the remains of buildings are grouped near the sandy beach together with a number of middens and ash-pits. Surface pottery included thirteenth-century wares, a fragment of celadon and glazed Persian wares of the eighteenth century. The site would appear to have been in occupation, possibly intermittently, at roughly the same periods as Yusufiyah [located 1 km to the west of Ruwais], i.e. the thirteenth to eighteenth century” (De Cardi 1978, 189).

*Methodology*

Three test pits were excavated, measuring 1.00m by 1.00m at their base. The pits were located along the length of the site, targeting three separate areas of midden dumping. In order to ensure safe working conditions, Trenches 2 and 3 measured 1.50m by 1.50m, as they

were excavated to a depth of 1.95 and 0.90m respectively. All trenches were excavated stratigraphically, using a single context recording system. The small excavation areas, combined with often homogenous midden deposits, meant the definition of separate contexts was at times difficult. In these instances contexts were set at 0.20m arbitrary intervals to provide stratigraphic control. A 50% sample of all deposits was dry sieved, with the remainder being hand sorted for finds. Thirty litre bulk floatation samples were taken from each deposit and charcoal samples were collected from the sections of the trenches.

An area of masonry was visible on the surface between Trenches 2 and 3. Here a 50mm-100mm layer of topsoil was removed to expose the underlying wall lines in plan. These were then planned, and tied into the Qatar National Grid (QNG), although no excavation was undertaken. A brief walkover survey of the area north of the site was conducted. Archaeological features and finds were identified and subsequently located using a handheld GPS and photographed.

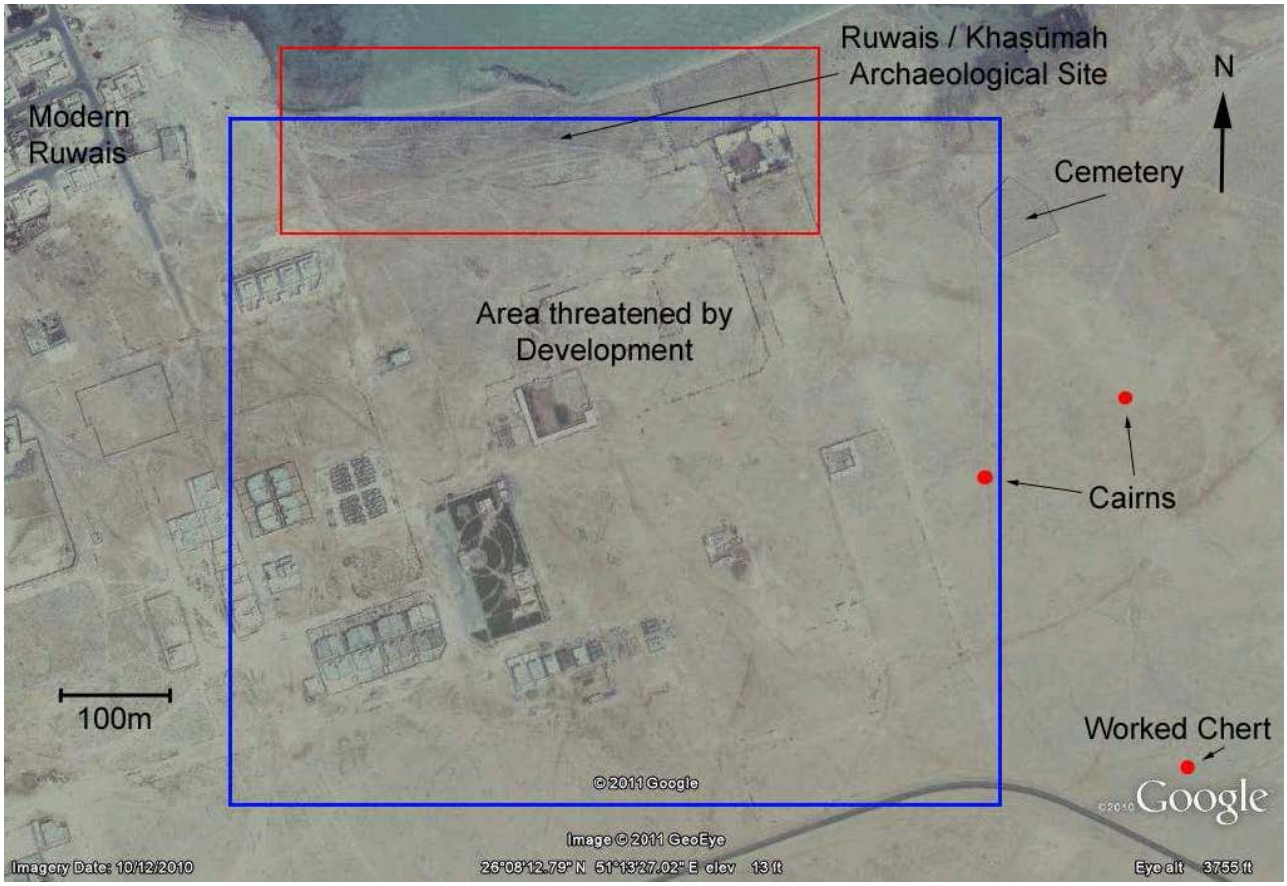



Figure 4.89: Khasuma

*Trench 1 (KHA01)*

Natural sand (24), recorded at 2.08mOD, in Trench 1. Three small pits or postholes [20], [22] and [23] cut into natural sand (24) . Extending beyond the limits of the trench in the NE corner cut [23] was not fully exposed, and measured 0.15m x 0.12m, with a depth of 0.08m. The fill (19) of the cut [23] was mid greyish brown, and possibly burnt (Figure 4.98). A C14 sample was taken from the fill matrix. Extending into the east-facing section of Trench 1 was a circular cut [22], measuring 0.71m N-S, and 0.21m E-W, with a depth of 0.12m. The fill (18) of cut [22] was again burned, and a C14 sample was collected. A third cut [20] extended into the southern section of the trench, measuring 0.38m N-S x 0.53m E-W, with a depth of 0.19m. As with the fill of the previous cuts, the fill (17) of cut [20] was burned, and a C14 sample was taken from the fill matrix.

Mid greyish brown silty sand (15) sealed these cut features, and contained burned stones, shells, fragments of glass bracelets, a coin, 18th century pottery, bone, glass, and metal. While the section contains a series of laminated deposits, these were difficult to ascertain in plan and the division between (15) and the previous locus (14) was hard to define. Grey brown midden deposit (14) contained similar finds and inclusions to (15). The boundary between the topsoil, locus (13) and underlying locus (14) was again

hard to define plan. Topsoil (13) was heavily disturbed by roots, animal burrows and vehicle traffic.

*Trench 2 (KHA02)*

The natural deposits, (27), in the base of Trench 2 consisted of yellow brown sandy silt, sealed by a thin 20-50mm thick layer of beach rock and rounded gravels, representing the remnants of a wave cut platform and associated beach deposits. The natural was cut by a sub-circular undercutting pit [26] (Figure 4.99), extending beyond the trench to the south and measuring 0.46m N-S and 0.52m E-W. The feature was not fully excavated, as the depth of the deposits made work unsafe. The mid brown silty sand fill (25) was excavated to a depth of 0.40m and contained a small amount of pottery and fishbone. A C14 sample was taken from fill (25).

Fill (25) was sealed by a laminated mid greyish brown midden deposits (21). Individual layers were hard to define in plan, but can be seen in section as the accumulation of many individual dumping events. This layer was sealed by similar midden layers, (16), (10), (9). These deposits varied slightly in colour, but contained similar find assemblages, including large unglazed pot sherds, frequent fish bone and burnt stone and occasional fragments of glass bracelet.

The upper layers of midden were considerably less sandy, containing more ash and dark brown silty material. The finds in the upper layers were less well preserved, with smaller pieces of pottery and bone present. Midden dumps (8) and (7) were the latest in the sequence recorded. Both deposits had animal burrows running through them. Deposit (7) was sealed by more compact ashy silty sand that contained frequent small, sub-angular gravels. This topsoil layer (6) was eroded, deflated and heavily intruded upon by animal and vehicular traffic.

*Trench 3 (KHA03)*

Mid yellowish grey natural beach sand (12) was recorded at a depth of 2.11mOD in Trench 3, corresponds roughly to the level of natural deposits found in Trenches 1 and 2. Overlaying this natural sand was a series of midden deposits. The first of these (11) was mid yellowish orange with fine lenses of mid brownish grey, and contained pottery and a fragment of a glass bracelet. This layer was sealed by mid yellowish grey midden (5), this deposit contained a small lens of burnt material, possibly a fire spot. This layer is sealed by further loose laminated ashy midden deposits (2), (3) and (4). All contained a similar assemblage of pottery and animal bone. The top soil (1) was again very disturbed by animal burrows and vehicle traffic.

*Structural Remains*

Two small areas were scraped back to expose part of a large masonry building. The area of the structure that was exposed measured over ten metre in length and 4.00m wide, although the building probably survives over a much larger area. The masonry was recorded as (29) and (30), and was sealed by 50-100mm of mixed mid grey brown topsoil (28).

The walls measured 0.50 to 0.60m thick and were constructed of a mixture of rough beach rock and limestone. The building was orientated east-west, running along the beach. The southeast corner was exposed, along with a row of small rooms along the southern extent of the structure, measuring c. 2.60m across. The building continued to the north and west, beyond the limits of the trench. It is likely that the building represents a large, walled residential compound. The midden deposits, similar to those excavated in Trench 1-3, appear to be deposited against the southern side of the structure and are probably contemporary with its occupation.

*Possible cairns*

Inland from the site c. 500m several heavily deflated stone cairns were recorded. A single cairn

was recorded at QNG 201317 486744 and a group of several smaller cairns were recorded at QNG 201111 486863. Built of unworked beach rock, the cairns measured 1.00-1.50m in diameter and survived to 0.10-0.20m high. These ephemeral features were poorly defined, and no artefacts or dating material was found in association with them. It is possible they represent burial cairns of a pre-Islamic date.

*Lithic scatter.*

To the south of the site the sabkha extends for c.800m, before rising several metres to a low stony rise, representing a relic early Holocene shoreline. A poor quality mid brown chert is present along this raised plateau in significant quantities. Several worked fragments of chert were identified, including two scrapers that were collected for further investigation. Both scrapers were retouched. The larger of the two scrapers has cortex present on one side.

*Conclusions and Recommendations*

The archaeological site of Ruwais/Khasuma is covered by extensive midden dumps, resulting from the disposal of domestic waste. A preliminary examination of pottery from the upper levels of Trench 3 identified creamy sandy wears, Julfar II painted pottery, Iranian Khunj wears, but almost no blue on white glazed pottery. Collectively the assemblage from the upper levels of midden in Trench 3 suggests a deposition date in the 18th - 19th century.

The site covers an area of c.400m2, of which only 3.00m2 has been excavated, representing a sample of 0.75% of the total site. In this small area earlier wooden post built structures and pits were identified in two of the three trenches excavated. At least one stone building was identified running parallel to the coastline, and it is likely that similar buried structures are present along the length of the site. The building was not excavated, and it is unclear whether it is of a contemporary date to the middens, or represents an earlier structure buried under the midden material.

It seems very likely that the site of Ruwais / Khasuma is the same location as the middens and buildings de Cardi identifies “about half a kilometre to the east of Ruwais” (1978, 189). De Cardi believed this site to be occupied, at least intermittently, from the thirteenth century onward. The structures on the site, the cemetery located to the southeast, and the substantial midden deposits, all indicate a relatively large and possibly long lived settlement. The presence of early, possibly prehistoric, archaeology directly inland of the site attests to the long human presence in this area.

The site is currently threatened with destruction as the area is being developed and incorporated into modern Ruwais. The site of Ruwais/Khasumah is clearly of significance and could represent one of the last surviving elements of Ruwais’ old historical fabric. Elsewhere in the Ruwais area this has been almost completely displaced by modern development. We recommend that the site is either protected, and current development plans adapted to reflect this, or alternatively fully excavated and recorded archaeologically prior to construction.

## 4.4 Conclusions

The diverse research carried out as part of the regional survey across northern Qatar produced a range of new insights into the historic landscape and rural archaeology of the region. It also created a detailed record of a number of key sites (Qal'at Shuwayl, Ain Muhammed and Fuwairit) in northern Qatar that had hitherto only been preliminarily documented. Philip Macumber's hydrological and geoarchaeological survey reinforced findings from previous seasons, documenting how closely related the availability of fresh water wells and rural settlements was.

An emerging theme is the relationship between numerous coastal sites that lack fresh water, and inland satellite settlements clustered around wells. Al Zubarah, with the hinterland sites of Qal'at Murair, Qal'at Shuwayl, Lisha and Helwan, certainly falls into this group, although this pattern is replicated at Freiha (Ain Mohammed), Fuwairit (Qal'at Zarqa) and Jumayl (fortat the inland field system). These satellite sites, often associated with small fortified compounds or homesteads, provided a crucial resource infrastructure to these coastal settlements, protecting water sources, grazing areas for livestock and other agricultural activities (such as date plantation). The precise relationships between the coastal sites and these satellite communities, as well as the wider rural landscape, requires further, more detailed work, but the initial steps taken by QIAH as part of this season mark a decisive step forward in generating a better understanding of these relations and localities.

# 5. Finds from the 2010-2011 Season

The following report will give a brief summary of the bulk finds and samples and a more detailed description of some of the catalogued field objects.

## 5.1 The Bulk Material

Bulk finds are those that are recovered in large quantities during excavation and are bagged up by material and context to be studied by a relevant specialist. They include the following main material categories: ceramic sherds, animal bone, shell, glass, metal, bitumen and tabun. The glass finds include fragments from vessels, window glass and bracelets. The metal consists mostly of fittings such as nails, spikes, hinges, hooks etc.

The following are the total number of bags of each of these bulk materials recovered from Al Zubarah and Freiha. The quantities reflect the size of the two sites, with Al Zubarah being considerably larger than Freiha.

| | Ceramic | Bone | Shell | Glass | Metal | Bitumen | *Tannur* |
|---|---|---|---|---|---|---|---|
| Al Zubarah | 702 | 576 | 61 | 167 | 296 | 14 | 20 |
| Freiha | 273 | 150 | 92 | 45 | 55 | 54 | 2 |

The number of shells may seem to be rather low, given the coastal location of the sites, but it reflects to a large degree the recovery strategy. Small shells are found within much of the building material, both in wall and surface make-ups and so shells were only collected when a significant number were found together or if they were worked. The latter comprises mostly cowrie shells. This last season many oyster shells were found at Freiha which will hopefully prove to be evidence for the pearl diving industry. Bitumen was also collected when significant deposits were found, and the study of this material should prove fruitful as it occurs in many forms – coating the inside of and plugging holes in ceramic vessels, compact layers and lumps, and small rounded or bath-plug formed pieces.

The following table gives the individual bag total of bulk material by excavation area.

| | Ceramic | Bone | Shell | Glass | Metal | Bitumen | *Tannur* |
|---|---|---|---|---|---|---|---|
| ZUEP01 | 251 | 215 | 21 | 37 | 90 | 13 | 16 |
| ZUEP02 | 250 | 202 | 9 | 52 | 157 | 1 | 3 |
| ZUEP04 | 162 | 117 | 17 | 21 | 19 | 0 | 1 |
| ZUEP05 | 39 | 42 | 14 | 57 | 30 | 0 | 0 |
| FREP01 | 85 | 29 | 12 | 9 | 8 | 10 | 0 |
| FREP04 | 158 | 104 | 62 | 28 | 36 | 44 | 1 |
| FREP05 | 24 | 12 | 11 | 5 | 8 | 0 | 1 |
| FREP06 | 6 | 5 | 7 | 3 | 3 | 0 | 0 |

At Al Zubarah two brief observations can be made from the above figures: firstly the area ZUEP04 has noticeably less material then ZUEP01 and ZUEP02 despite being of similar size and likewise a domestic habitation. Further study and analysis of the finds will hopefully shed light on this, but one possibility is that ZUEP04 was cleared out before its abandonment whilst the other areas may have seen a gradual decline or a rapid desertion. ZUEP05 was expected to have less material being a small slot trench but given its size the area produced a high number of finds, a reflection of the nature of the deposit being one of the town's middens. At Freiha the difference in find quantities again reflects the nature of the area being excavated. FREP01 as the town's mosque is unlikely to produce as much material as the domestic building that is FREP04.

## 5.2 The Samples

The following are the number of soil samples taken within each area.

| ZUEP01 | ZUEP02 | ZUEP04 | ZUEP05 | FREP01 | FREP04 | FREP05 | FREP06 |
|---|---|---|---|---|---|---|---|
| 159 | 266 | 146 | 25 | 43 | 113 | 21 | 6 |

Once again the figures reflect the character of the excavation area. The notably high number from ZUEP02 is due to the large number of postholes in the open courtyard at different phases. A few other samples were taken where necessary, for example of building material such as mudbrick, carbon for dating purposes, charcoal for wood analysis and, from the midden ZUEP05, botanical samples and one sample of animal hair.

## 5.3 The Catalogued Field Objects

Field objects are finds that are considered important enough to separate out from any bulk category, for example coins, complete glass vessels, bracelets, stone tools and ceramic vessels. They are given an identification number in the field and their location is plotted. They are subsequently catalogued by the finds registrar.

A total of 575 objects were catalogued during the 2010/2011 field season. Of this number 13 are from Fuwairit, 128 from Freiha and 434 from Al Zubarah.

### 5.3.1 Material

The following 35 materials, listed alphabetically, are represented between the three sites:

Amber, basalt, beach stone, bitumen, bone, carnelian, ceramic, coral, cork?, copper alloy, fabric, faience, flint/chert, glass, granite, haematite, iron, ivory, lead, limestone, pearl, plaster, plastic, quartz, quartzite, rope, rubber, sandstone, shell, silicified limestone, turquoise, unknown metal, unknown stone, styrofoam and wood.

Unsurprisingly, Al Zubarah has the most variety, with 31 types of material; Freiha has 22 whilst Fuwairit has just three. The four most common materials are copper alloy, glass, stone (of various types) and ceramic. Their totals are as follows: copper alloy – 300 objects, glass – 65, stone – 64, ceramic – 38. Of copper alloy about half are coins whilst the rest include fittings and attachments of various kinds, and jewellery. Glass objects mainly consist of bracelets, beads and vessels. The stone objects include hand-held tools, querns, weights, jewellery and building elements. The ceramic finds include vessels, shisha bowls, tobacco pipes, reused sherds and beads.

### 5.3.2 Object Type

The following object categories were recorded this season:

Architectural elements: door-jamb, door-socket, door-spring, hinge-socket, window-jamb.

Commerce: coin.

Jewellery/Ornaments: bead, bezel, bracelet, button, earring, inlay, pendant, pin, pin/clasp, ring, toggle.

Metal Fittings: buckle, chain, disc, finial, fitting, hanging element, hinge, hook, nail, nail/tack, padlock, plate metal, ring link, rod, rosette, shaft, sheet metal, strip, wire/link.

Miscellaneous: small ball, bullet cartridge, game piece, pearl in a shell, plastic sheet, reused ceramic, rope, shot, spinning top, textile, worked bone, shell, coral and wood.

Smoking Utensils: shisha bowl, tobacco pipe.

Tools: blade, hammer-stone, knife, pestle, plumb bob, rotary hand quern, stopper, tweezers, weight.

Vessels: bottle, bowl, cup, jar, lamp, vessel.

The majority are found in quantities of less than 10. Those whose occurrence is greater include the following: weights x 17 of beach-stone, ceramic, copper alloy, granite, haematite, lead, limestone, plaster, sandstone and unknown stone; chains x 12 of iron and copper alloy; worked bone x 13; small balls x 18 of bitumen, ceramic, haematite, limestone; bracelets x 33 of copper alloy and glass; beads x 51 of amber, bone, carnelian, ceramic, coral, faience, glass, ivory, pearl, rubber, turquoise, unknown stone, and coins x 192 of copper alloy.

### 5.3.3 Specific Finds of Interest

*Rotary Hand Querns*

From Freiha in FREP04 seven rotary hand querns were recovered, including one intact upper grinding stone (cat. no. 69, locus 297). This quern is made of silicified limestone, a good choice for it contains many small shell inclusions which are self-sharpening to a degree as the surface is worn down.

Grinding face: diameter 36 cm, level to slightly concave, smooth, polished with visible striations. Upper face: diameter 32 cm, level, rough. Edge: thickness 5 – 6 cm, convex to oblique tapering into the upper face, rough. Central perforation: diameter 5.4 – 7.1 cm, wider at the grinding face to allow better dispersal of the substance being ground onto the grinding face. The surface is rough and has traces of iron colouring on the lower part, probably stains from an iron rynd. These are small perforated cross bars that fit into the perforation. The spindle that is fixed in the lower grinding stone passes through the rynd thus securing the upper stone during rotation. Vertical handle socket 3.1 x 2.3 cm that perforates the stone and is lined with bitumen, presumably used to fix the handle in place.

These querns are mainly used for grinding grain to produce flour, but can also be used to grind pulses to remove the shells. What is interesting is that some were found in a room that has a date press installation, raising the question of whether they were used in this process in some way. The future analysis of the environmental material from the soil samples plus research into the local agricultural system and possible importation of grain will enable a fuller understanding of their exact function.

Whilst some of the querns from FREP04 were just broken fragments, this complete upper stone appears to have been simply left when the building was abandoned and the occupants moved on elsewhere. A skeleton of a cat found in one corner, in the same locus (297), indicates that the room was no longer in use.

*Diving Weights*

Several diving weights have been found at Al Zubarah including a group of 14 from ZUEP02 last season and one from ZUEP01 (cat. no. 1026, locus 1735) this season. They are mostly sub-conical in shape, rounded/level on the base and top and with a lateral perforation through the upper body. Some have a distinct groove on the top. The dimension of the ZUEP01 example gives an indication of their size – length c.16 cm, width c.14 cm, thickness c.11 cm, perforation diameter c.3.5 cm. Weight 5231 grams. Most of these weights are made from haematite, a stone not local to Qatar. They are dark grey-black in colour with many small mica inclusions making them exceedingly eye-catching as they glitter and sparkle in water and sunlight. They are very heavy given their relatively small size and thereby perfect for their function. They would have been attached to the boat by a long rope which in turn would have been held by the pearl diver. A loop in the rope was made where the divers would place their feet before jumping into the water. The weight would then have carried them quickly to the required depth to look for the oyster shells.

The pearl diving industry is still within living memory and there are books with photographs and written accounts. In the souk in Doha one can find shops displaying diving weights, fishing nets, nose clips and even the tools used for weighing and trading the pearls. To find these weights in situ within a context of use adds a new dimension to this aspect of Qatar's history. Further research will hopefully shed light on the source of the haematite, and on their manufacture. Other questions might be answered through ethnographic work with people who still remember the pearl divers – for example, were the weights personal possessions?

*Worked Ivory*

Two decorated objects of worked ivory are intriguing though their function is as yet not known; they may have been used in textile production or are possibly ornaments. One (cat. no. 523 locus 1428) from ZUEP01 is incomplete but this season a second intact example was found in FREP04 (cat. no. 146, locus 426). Both are roughly cylindrical in shape with a central vertical perforation and a second lateral perforation in one side. Both have incised decoration of rings around the circumference and small circles with central dots. The dimensions of the intact Freiha example are as follows: Height c.3.6 cm, diameter maximum c.3.7 cm, minimum c.3.1 cm, perforations – vertical, diameter maximum c.0.8 cm, minimum c.0.5 cm, lateral, diameter c.0.7cm, weight 42 grams. The side perforation is drilled at an angle from the right and has distinct wear marks on its right edge. In addition there are patches of indented cross hatches on the upper part of the body. These various patterns are indicative of a possible textile function, as a whorl or bobbin perhaps, where something has been passed through the lateral hole repetitively and wound around the top of the object. A worked, broken shaft of mother of pearl was found protruding from the central vertical hole, length c.3.5 cm, width c.0.7 cm. It is this item, if broken off in situ that may indicate an ornamental use, as a hair or clothes pin for example.

# 6. The 2010-2011 Season: Summary and Conclusion

## 6.1 Introduction

The 2010-2011 archaeological fieldwork season of the QIAH carried out a wide ranging and successful program of investigations across northern Qatar over the course of its five month season. These various fieldwork endeavours have provided a wealth of new data and insight into the Islamic heritage of northern Qatar, which will be briefly summarised here.

An emergent theme in dealing with the archaeology of northern Qatar is the increasing pressure posed by development and construction work across the region. Qatar's fast paced development of national infra-structure, as well as a rapid rise in construction of housing areas, poses a challenge to efforts in mitigating their impact on the historic environment. Hence, QIAH carried out rescue excavations at one site this season, while expanding its program of archaeological survey to monitor existing and emergent threats to archaeological sites and historic buildings and places.

At the same time, the project continued its intensive program of research into the settlement of Al Zubarah and Freiha. The work here has begun to provide us with an ever more vivid picture of daily life, economy and trade in these early modern, historical sites. They provide unique perspectives on the life on Qatar's northwest coast during from the 17th to the early 20th centuries.

## 6.2 Excavations and Surveys in Al Zubarah

Following on from our initial 2009 survey of Al Zubarah, work was carried out this season to complete the plan of the settlement, including the extant previous excavation areas from the 1980s and 2000s. A newly discovered small settlement within the area of the Al Zubarah Archaeological Site perimeter fence was also fully mapped, as was an enclosure to the south of the southern screening wall. This work now provides us with a complete and up-to date plan of the Al Zubarah Archaeological Site.

Excavations in ZUEP01 succeeded in fully excavating 'Compound 2', a courtyard house situated to the north of 'Compound 1'. This building displayed a complex series of alterations and development, as parts of the house fell out of use, walls were realigned and an open yard established to the west. This shrunk Compound 2 to a much smaller size. The alleyway to the north of Compound 2 is similar in width and overall appearance to the east-west running alley between Compounds 1 and 2 in ZUEP01. These formed an integral part of a distinct, secluded neighbourhood. A building at the northern edge of ZUEP01, north of the alleyway, was at one point dismantled and a more temporary occupation established. These consisted of postholes, occupation floors and clay-lined hearths. Significant archaeological deposits were noted in the walls of pits and when the courtyard of Compound 2 was half-sectioned. These clearly belong to Phase 6 of the occupation of Al Zubarah. They appear to be more substantial than previously observed and warrant further excavations in ZUEP01 as part of the 2010-2011 season to better determine their function, date and distribution.

Excavations in ZUEP02 are at an intermediate stage at this point. It is fair to say that the excavations here are probably the most complex and time-consuming in the entire excavation area of Al Zubarah. This is because of the large area that was opened to fully expose structures in plan, the number of features and deposits encountered within the area, and the fact that ZUPE02 preserves evidence for the entire Al Zubarah sequence (Phases 6-1). Nevertheless, excavations have made significant progress during this season. The northern extension linking ZUEP02 with the former souk excavation area will in the next season allow us to tie in these two disparate elements and understand the development of the souk area holistically. Almost all of the Phase 3 architecture, and most of the Phase 4 archaeological features, have been dealt with and it is expected that a wider exposure of Phase 5 architecture across this excavation point can be achieved during the next season.

Work in ZUEP04 made significant progress over the course of the last season and achieved important results. Following on from the excavations in a small part of the fortified palatial compound in 2010, this year's excavations exposed an entire courtyard area and adjacent rooms within Al Zubarah's largest single building. Excavations of the courtyard area and individual rooms reinforced the impression gained from last year's excavations that this building did not have a primarily militaristic or defensive function. The discovery of a madbasa (date press), hammams, a storage room, and a food preparation or kitchen area, showed that rooms in the building fulfilled some of the same functions as those found in the courtyard houses in ZUEP01. A staggered, blind entrance which provided access from alleys into the courtyard, which was found in this year's excavations, furthermore shows that privacy was a concern for the inhabitants. This indicates the overall rather domestic character of this complex of rooms and courtyards. The palatial compound shares many features with similar buildings throughout urban sites in the Gulf. Its palatial character is nevertheless evident in the size, shape and positioning within the town. The palatial compound is the largest single building within Al Zubarah. Its towers and perimeter wall make as much a statement about status and importance of the occupants, as they are defensive. The building appears to have been constructed in tandem with the outer town wall and reinforced the defense of the town at this particular point. Nevertheless, on the inside it housed people who likely belonged to a large extended family group or clan, who very probably played an important role in the administration of Al Zubarah's affairs and trade.

Excavations in ZUEP05 targeted one of the extra-mural middens of Al Zubarah. This is the second midden yet excavated in Al Zubarah – the first being located between the palatial compound and the outer town wall in ZUEP04 (excavated in early 2010). Excavations here documented the full depth of the stratigraphy of this midden and retrieved copious samples of ceramics, fauna, botanics and other items that will – once analysed – provide crucial insights into the diet, culture, economy and trade connections of Al Zubarah's inhabitants. A small segment of the outer town wall was also revealed in the excavations, providing a further glimpse of its original construction techniques.

A recurrent question in the excavations at Al Zubarah has been to establish the age of the main settlement at Al Zubarah. Written sources have long suggested that the primary settlement was founded during the 1760s, but there is ambiguity whether this expanded a previously existing settlement or whether the major phase of occupation was stamped out of the ground from nothing. Ephemeral evidence for a pre-Phase 5 occupation in the form of post-holes and clay-ovens was found in both ZUEP01 and ZUEP04, but has so far not amounted to any substantial image of the pre-Phase 5 occupation. ZUEP06 was put in place to attempt to gain additional data on these earlier phases. Excavations in this area of high ground, however, proved somewhat inconclusive. Although evidence for dumping of production waste and multiple pits relating to possible industrial processes (such as bitumen processing) were documented, natural deposits were encountered relatively close to the modern ground surface. This appears to suggest that prior to settlement the Al Zubarah area was dominated by an undulating landscape consisting of bedrock and sand dunes. Further work with the material culture recovered from ZUEP06 is necessary to gain a better understanding of the time-depth documented in this excavation area.

Overall then, the phasing scheme suggested in QIAH's previous End of Season report 2009-2010 (Richter and Walmsley 2011), has been confirmed by the excavations in 2010-2011. ZUEP01 and ZUEP02 are the only two areas which preserve the entire sequence, while other areas (ZUEP04 and ZUEP05) appear to preserve evidence for only some parts of this sequence (i.e. the earlier part). While excavations as part of this season have confirmed this phasing, we are still some way from understanding both the chronology and sub-division in more detail. Excavations in

ZUEP01 and ZUEP02 in particular have shown that these phases are coarse grained divisions. Each phase, in particular Phases 5 and 3, preserve multiple sub-phases that incorporate construction of architecture, occupation, refurbishment, re-occupation and abandonment.

### Excavations in Freiha

The 2010-2011 season saw the first full five-month excavation at Freiha, building on the promising initial results from the 2009-2010 survey and small scale excavations. Work was concentrated on the supposedly later, central part of the settlement to the west and north west of the fort at Freiha. Here, the remains of a large mosque and an area containing the remains vernacular buildings were excavated.

The mosque underwent multiple phases of rebuilding and restructuring, interspersed with apparent abandonment and partial collapse. Presence of a minbar adjacent to the mihrab at one point during the sequence of mosque development highlights the similarities of this building with many other extant mosques in Qatar (for examples see al-Kholaifi 2006). Although the mosque was restructured and expanded it remained located at the same spot over the course of the occupation. This suggests that this area remained the focus of settlement for some time and that the restructuring and rebuilding of the mosque reflects the changing economic and social fortunes of the community at large.

Excavations in the central zone of the settlement in FREP04 revealed the remains of several linked courtyard houses of different size. In their simplest form they consist of a single room with an added perimeter courtyard wall. In general terms, they are smaller than the Al Zubarah courtyard houses and contain fewer rooms, probably reflecting fewer economic means. The excavations in FREP04 have revealed a multi-faceted sequence of construction, which begs further exploration in the forthcoming fieldwork season. We stand to learn a great deal from exploring the settlement's core, so as to gain a complete stratigraphic sequence of the occupation.

One emergent theme from the work in Freiha is the cyclical nature of the occupation at the site. Episodes of construction and occupation are interspersed with abandonment, partial decay of buildings and reoccupation. This highlights the at times transitory nature of settlement at Freiha, perhaps fitting in first with the emergence of Al Zubarah as a major site and likely focal point in the landscape, followed by Al Zubarah's partial abandonment and the reoccupation of Freiha. This forms part of an emergent, incredibly interesting story of the local settlement sequence.

## 6.3 Surveys and Rescue Excavations in the Al Zubarah Hinterland

The QIAH team carried out extensive survey work as part of the 2010-2011 field season, which included both field walking surveys, as well as topographic and mapping surveys. In addition, QIAH staff engaged in rescue archaeological work at the settlement of Khasuma near Al Ruwais.

Topographic mapping at archaeological sites – including Al Zubarah – is creating a lasting and detailed record of regional settlements. In addition to completing the town plan of Al Zubarah, key sites in the surrounding landscape were also mapped, including Qal'at Shuwayl, Ain Mohammed and sites near Ruwais. The largest topographic mapping work, however, was undertaken at Fuwairit, a major settlement on the east coast. Here, the entire settlement was surveyed generating a detailed topographic map of the site.

Fuwairit is an important site on the east coast of northern Qatar, occupying a narrow sand strip that is situated in a narrow, shallow bay. The survey of the site has shown that the layout of a complete 19th century village is preserved here. Individual buildings, alleys, at least one large compound and a mosque were identified from the detailed topographic data generated by the survey. This provides a detailed and thorough characterisation of the archaeological remains at the site, which now requires urgent attention to protect it from being damaged. Trackways pass the site nearby and vehicle traffic on the site is not uncommon. Fuwairit beach, situated to the

east of the site, is a popular weekend picnic and swimming spot, and the popularity of this beach is contributing to the further damage of the site by vehicle traffic.

Situated c. 1.5 km west inland from Fuwairit lies a small fort accompanied by some outbuildings, a mosque and a well. The small settlement of Az Zerqa appears to have functioned similarly to Ain Mohammad and Qal'at Shuweyl did to Freiha and Al Zubarah: as a small fortified site protecting crucial fresh water sources. Similarly to Freiha and Al Zubarah (and Ruwaidah for that matter) fresh water is not available immediately at Fuwairit. Sources inland provide the only reliable supply of fresh water and therefore required protection. This pattern of a paired appearance of coastal village sites with inland, fortified satellite settlements is therefore characteristic of the northern Qatar peninsula settlement pattern during the 18th to 19th century.

Topographic surveys at Qal'at Shuwayl and Ain Mohammad near Al Zubarah confirm this pattern. Both sites have small forts associated with wells, in addition to small settlements. The Shuwayl settlement appears to be smaller and somewhat more dispersed, whereas the Ain Mohammad settlement appears to be more concentrated around the two small forts. Recent road works and bulldozing in the area has truncated parts of this quite large site, which also contains evidence of more recent occupations in the form of breeze block buildings.

A field walking survey along the coastline between Fuwairit and Ras Laffan Industrial City was also carried out this season. This work aimed to characterise the occupation of this zone to gain an initial understanding of this particular region. This brief survey located a number of sites, some of which had hitherto not been recognised. The settlement of Al Marrouna, in particular, has to be highlighted. It is a today almost buried site, which has been heavily impacted and truncated by domestic compounds. This likely 18th - 19th century site requires some urgent attention, as it is reasonable to assume that it may soon be completely lost. The same survey also attempted to relocate the important site of Al Huwailah, once a prominent settlement on the east coast of Qatar. Sadly, the archaeological fieldwork confirmed that this settlement has been almost entirely lost due to modern development. The location of the fort and settlement of Al Huwailah are barren ground on the surface, although it cannot be completely excluded that there may be some sub-surface preservation of archaeology. Further investigations – perhaps using geophysical techniques – may be required to verify the presence of sub-surface archaeology here.

Lastly, the project carried out rescue excavations at one site to the immediate east of the modern settlement of Al Ruwais. Survey in the area had indicated the presence of four distinct midden mounds in a group along the shoreline here. Since this area is earmarked for development rescue excavations were carried out at this site to gain an insight into the character and chronology of settlement. The two excavated test units did not only produce some significant samples of material culture, fauna and other finds, but also produced evidence for at least one building buried beneath midden deposits. This site is therefore of some interest and importance and further work may well be required here.

Surveys and small scale excavations across northern Qatar are providing us with an ever better understanding of the settlement pattern and relationship between the environment and human land use. Macumber's important geomorphological and hydrological research reinforced again the idea that well locations and their exploitability and reliability governed the settlement pattern during the medieval and post-medieval periods in northern Qatar. Further mapping of key sites and more extensive field walking in northern Qatar will provide us with an ever more detailed understanding of the region's archaeology and heritage.

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